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*FINAL*

**ENVIRONMENTAL ASSESSMENT**

**FOR THE**

**RADAR TOMOGRAPHY RANGE**

**AND EQUIPMENT STORAGE FACILITY**

**WRIGHT-PATTERSON AIR FORCE BASE, OHIO**

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**OCTOBER 2012**



**88<sup>TH</sup> AIR BASE WING**  
**ASSET MANAGEMENT DIVISION**  
**PLANNING AND REAL ESTATE SECTION**

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**FINDING OF NO SIGNIFICANT IMPACT  
FINDING OF NO PRACTICABLE ALTERNATIVE  
RADAR TOMOGRAPHY RANGE AND EQUIPMENT STORAGE FACILITY  
WRIGHT-PATTERSON AIR FORCE BASE, OHIO**

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Pursuant to the Council on Environmental Quality regulations implementing the National Environmental Policy Act (NEPA) (40 Code of Federal Regulations [CFR] 1500-1508), Department of Defense Directive 6050.1, and Air Force regulation 32 CFR Part 989, the 88th Air Base Wing (ABW) Civil Engineer Directorate, Asset Management Division prepared an Environmental Assessment (EA) for the construction and operation of the Radar Tomography Range and Equipment Storage Facility in Area B at Wright-Patterson Air Force Base (AFB), Ohio. The EA is incorporated by reference into this finding per 40 CFR 1508.13.

**Purpose and Need**

Wright-Patterson AFB proposes to install a Tomography Range and Equipment Storage Facility in Area B to support the mission of the Air Force Research Laboratory Sensors Directorate (AFRL/Ry). The purpose of this action is to improve the efficiency of AFRL/Ry tomography research and development activities. The need for this action is to consolidate the radar tomography research and development from Hanscom AFB, Massachusetts and Rome Research Site, New York to Wright-Patterson AFB as a result of the Base Realignment and Closure Act of 2005 (BRAC).

**Proposed Action/Preferred Alternative**

The Proposed Action includes installation of the antenna tower ring, equipment storage facility (operations building), and associated access and maintenance roads. The tower ring consists of 12 antenna towers, each 50 feet (ft) tall on a concrete foundation and anchored to the ground by guy wires. The tower ring is 200 meters (approximately 650 ft) in diameter. The Tomography Range footprint requires approximately 3 acres. There would be 4 to 6 people conducting tests at the range 2 to 4 times a month. The Tillman Pit area in the southwest corner of Area B is the preferred location. This site is vacant, large enough to construct the tower ring and equipment storage facility, and no demolition or relocation is required. Although not critical to the tomography mission, this location is within the line of sight of the antenna towers located near the AFRL/Ry building which provides opportunity for additional testing and experimentation. Access to the site is through a gate located off Harshman Road.

**Huffman Prairie Alternative**

A site near Huffman Prairie in Area A was evaluated. Although the site was not optimal in comparison to the preferred site at Tillman Pit, it was identified as a reasonable alternative location to analyze in the EA. The Tomography Range design and construction is the same as the Proposed Action. The Huffman Prairie alternative site is flat and vacant with sufficient space for the layout of the antenna tower ring and equipment storage facility footprint. Proximity to Runway 05R/23L and clear zones for hot cargo pad, Huffman Prairie National Historic Landmark, and Brick Quarters Historic District negatively affect this location.

**No Action Alternative**

The Proposed Action would not proceed under this alternative. The tomography mission at other locations were deactivated because of BRAC decisions and the antenna tower ring no longer exists at



other locations to support tomography research and development activities. The Sensors Directorate branches from Rome Research Site have relocated to Wright-Patterson AFB, and therefore, the antenna tower ring and services must relocate to Wright-Patterson AFB to continue the AFRL/Ry tomography mission.

## **Environmental Consequences**

Air Quality (EA Section 4.1): There would be short-term increases in fugitive dust and construction equipment emissions during construction. The construction and operation of the Tomography Range would conform to the PM<sub>2.5</sub> State Implementation Plan and there would be no impact on the ozone maintenance status.

Biological Resources (EA Section 4.2): The Tomography Range design would leave intact most of the old field vegetation at Tillman Pit. The design and location of the antenna towers would not permanently disturb the entire area and most existing vegetation would be maintained. The antenna tower guy wires would be flagged with visual markers to minimize potential bird collisions. Any tree clearing activities would occur between September 30 and April 1 to avoid the summer maternity season of the Indiana bat. In accordance with the Endangered Species Act Section 7 consultation process, the U.S. Fish Wildlife Service concurred with the determination made by Wright-Patterson AFB that the Tomography Range is not likely to adversely affect listed species.

Cultural Resources (EA Section 4.3): No surface or subsurface artifacts or features were identified during the Phase I archaeological investigation completed at the preferred location. There would be no disturbance to properties listed or eligible for listing on the National Register of Historic Places. The Tomography Range would not impact any building with contributing characteristics to Wright Field Historic District because of distance and visibility. In accordance with the National Historic Preservation Act Section 106 consultation process, the Ohio State Historic Preservation Officer concurs with the determination made by Wright-Patterson AFB that the project would have no adverse effect on historic properties.

Environmental Justice, Protection of Children (EA Section 3.0): Construction and operation of the Tomography Range would not cause any adverse effects and the actions are within the confines of Wright-Patterson AFB; therefore, any low income or minority populations or children that may reside outside the confines of the base would not be disproportionately or adversely affected by the action.

Geology and Soils (EA Section 4.4): There would be minimal surface disturbance of soils and no impacts to topography; no excess fill would be excavated during site preparation and construction.

Hazardous Materials and Waste Management (Section 4.5): Part of the Tomography Range encroaches into the 300-foot buffer of Landfill 2; therefore, Wright-Patterson AFB notified and received authorization from Ohio Environmental Protection Agency to implement procedures to address buried waste materials, if encountered, during construction to maintain integrity of the landfill.

Health and Safety (EA Section 4.6): The action would not expose the public or Wright-Patterson AFB population to any health or safety risks. Adherence to safety standards would prevent risks to safety or health of construction workers. The potential for telecommunication interference and risks to human health and safety are negligible; safe exposure levels would be maintained.

Land Use (EA Section 3.0): The preferred location is consistent with the Wright-Patterson AFB General Plan; a change in land use designation is not required.

Noise (EA Section 3.0): The Tomography Range will not introduce any new source of noise to the area during construction or operation.

Socioeconomics (EA Section 3.0): There would be no changes to the local economy or employment. Construction dollars would provide negligible, yet beneficial short-term gains to the local economy.

Transportation and Infrastructure (EA Section 4.7): There would be temporary increases in construction traffic. No long-term impacts to transportation or traffic are anticipated. Ingress and egress to the site would be a right-turn only because of the proximity to the intersection of Harshman Avenue/Airway Road. The utility infrastructure is adequate for what is needed to operate the Tomography Range.

Visual Resources (EA Section 4.8): Trees and commercial buildings screen the site from view except at the Harshman Avenue entrance. The 50-foot tall towers would be visible from certain directions; however, the public concern over the scenic quality of the Tillman Pit area is low as the visual sensitivity to the area is compatible with military activities.

Water Resources (EA Section 4.9): There would be no direct impacts to surface waters. The floor of the equipment storage facility (operations building) would be constructed 1 foot above the 100-year flood elevation to address floodplain requirements. Three antenna towers and access roads within the regulatory floodway would have little or no effect on the storage capacity of the floodplain. Low impact development techniques are not feasible for the Tomography Range design and the existing site conditions. Natural hydrological conditions would be maintained to the extent practical to comply with Section 438 of the Energy Independence and Security Act.

Cumulative Impacts (EA Section 4.10): The action would not have adverse or significant cumulative impacts on any resource.

### **Mitigation Measures and Best Management Practices**

The action would not cause any adverse impacts that would require mitigation. Construction-related impacts are temporary, short-term, and cease after construction is complete. Such impacts are addressed by best management practices or permits required by federal, state, or local regulations to minimize or control the adverse effects of construction.

### **Agency Consultation**

In accordance with NEPA, 42 U.S.C. §4321 et seq. (1969), informal consultation was solicited with applicable agencies to seek input on the likelihood of environmental or other impacts resulting from the proposed action or alternative. Correspondence and the outcome from these consultation efforts with pertinent agencies are included as Appendix A of the EA.

### **Public Notice**

A public notice was posted in the *Dayton Daily News* on September 18, 2012, initiating the public review period for 30 days. Copies of the Draft Final EA were placed in the Fairborn Public Library. No comments were received during the public review period.

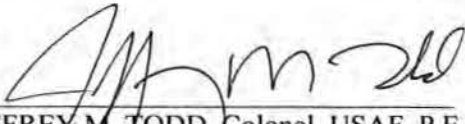
### **Finding of No Practicable Alternative**

Taking the above information into consideration, pursuant to Executive Order (EO) 11988, Floodplain Management, and the authority delegated by Secretary of the Air Force, Order 791.1, I find there is no

practicable alternative to avoid impacts to the floodplain, and that the Proposed Action includes all practicable measures to minimize harm to the environment. This decision considers the analysis of all possible alternatives that meet project requirements, as contained in the EA. The design of the Tomography Range and Equipment Storage Facility includes all practicable measures to minimize harm to the floodplain environment and comply with Section 438 of the Energy Independence and Security Act. This fulfills both the requirements of the EO and the Air Force Environmental Impact Analysis Process (32 CFR Part 989.14) for a Finding of No Practicable Alternative.

#### **Finding of No Significant Impact**

Based on my review of the facts and analysis contained in the EA, which is hereby incorporated by reference, I conclude that the Proposed Action will not have a significant impact on the natural or human environment. An environmental impact statement is not required for this action. This analysis fulfills the requirements of NEPA, the President's Council on Environmental Quality, and 32 CFR 989.



JEFFREY M. TODD, Colonel, USAF, P.E.  
Command Civil Engineer  
Communications, Installations  
and Mission Support

1 November 2012  
Date

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**ENVIRONMENTAL ASSESSMENT  
FOR THE  
RADAR TOMOGRAPHY RANGE  
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WRIGHT-PATTERSON AIR FORCE BASE, OHIO**

*Prepared for:*

**88<sup>th</sup> Air Base Wing  
Asset Management Division  
Planning and Real Estate Section**

*Prepared by:*

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**Contract No. FA8601-11-F-0003  
Task Order 007**

**October 2012**

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## COVER SHEET

**Responsible Agency:** U.S. Air Force, 88<sup>th</sup> Air Base Wing (ABW), Wright-Patterson Air Force Base, Ohio

**Proposed Action:** Radar Tomography Range and Equipment Storage Facility

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**Report Designation:** Final Environmental Assessment

**Abstract:** Wright-Patterson Air Force Base (AFB) is proposing to install a Tomography Range and Equipment Storage Facility to support the mission of AFRL/RV. The purpose of this action is to improve the efficiency of AFRL/RV tomography research and development activities. The need for this action is to consolidate the radar tomography research and development from Hanscom AFB, Massachusetts and Rome Research Site, New York to Wright-Patterson AFB because of the Base Realignment and Closure Act of 2005.

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In accordance with Section 7 of the Endangered Species Act, Wright-Patterson AFB consulted with and received concurrence from the U.S. Fish and Wildlife Service with the determination of no effect to listed and candidate species. In addition, Wright-Patterson AFB consulted with and received concurrence from the State Historic Preservation Officer under Section 106 of the National Historic Preservation Act with the determination of no adverse effect to historic properties. Wright-Patterson AFB notified and received authorization from the Ohio Environmental Protection Agency for construction activities within the buffer area around Landfill 2.

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## ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
ABW	Air Base Wing
AFOSH	Air Force Occupation Safety and Health
AFRL	Air Force Research Laboratory
APE	Area of Potential Effect
Base	Wright-Patterson Air Force Base
BRAC	Base Realignment and Closure
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
EA	environmental assessment
EFDZ	earth-filled disposal zone
EIAP	Environmental Impact Analysis Process
EIS	environmental impact statement
EISA	Energy Independence and Security Act
EPA	Environmental Protection Agency
°F	degrees Fahrenheit
ft	feet
FONSI	finding of no significant impact
ICRMP	Integrated Cultural Resource Management Plan
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
OSHA	Occupational Safety and Health Act
OU	operable unit
PM	particulate matter
PM2.5	particulate matter less than 2.5 microns in diameter
PM10	particulate matter less than 10 microns in diameter
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SWP3	Storm Water Pollution Prevention Plan
tpy	tons per year
US	United States

USFWS	U.S. Fish and Wildlife Service
WPAFB	Wright-Patterson Air Force Base

## INTRODUCTION

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## 1.0 INTRODUCTION

Wright-Patterson Air Force Base (Wright-Patterson AFB or WPAFB), Ohio is the headquarters for the Air Force Research Laboratory Sensors Directorate (AFRL/RV). The Sensors Directorate develops the new technologies that U.S. warfighters need to find and precisely engage the enemy and eliminate its ability to hide or threaten U.S. forces. In collaboration with other AFRL directorates and Department of Defense organizations, the Directorate develops sensors for air and space reconnaissance, surveillance, precision engagement, and electronic warfare systems.

Wright-Patterson AFB is proposing to install a Radar Tomography Range and Equipment Storage Facility in the southwestern corner of Area B to support the mission of AFRL/RV. This Environmental Assessment (EA) addresses potential environmental impacts related to the construction of the range including tower foundations, necessary utilities, access roads, and parking space. In addition, this EA identifies regulatory requirements and mitigation measures to minimize the potential environmental consequences associated with the proposed installation and operation of the tomography range. This EA does not address any actions required at Hanscom AFB, Massachusetts or Rome Research Site, New York to support the installation at WPAFB.

### 1.1 Purpose and Need

The mission of the AFRL/RV is to lead the discovery, development, and integration of affordable sensor and countermeasure technologies for warfighters. The AFRL/RV uses layered sensing to provide robust sensors and adaptive countermeasures that guarantee complete freedom of air and space operations for forces, and deny these capabilities to adversaries at chosen times and places. Layered sensing is characterized by using an appropriate sensor or a combination of sensors/platforms, infrastructure, and exploitation capabilities to generate situational awareness. To achieve this directive, development focuses on surveillance, precision engagement, and electronic warfare technologies. Its core technology areas include radar, active and passive electro-optical targeting systems, navigation aids, automatic target recognition, sensor fusion, threat warning, and threat countermeasures.

The purpose of this action is to improve the efficiency of AFRL/RV tomography research and development activities. The need for this action is to consolidate the radar tomography research and development from Hanscom AFB and Rome Research Site to WPAFB as a result of the Base Realignment and Closure Act of 2005 (BRAC). The personnel who perform the testing have relocated from the Rome Research Site to WPAFB. The Proposed Action would meet this purpose and need by relocating the tomography ring and services to WPAFB, which includes the installation of 12 antenna towers for research, communications, radar, intelligence, and command control.

### 1.2 Location

Wright-Patterson AFB is located in Greene and Montgomery counties in the State of Ohio. The cities of Fairborn, Beavercreek, Riverside, and Dayton border the Base (see Figure 1-1). The Base includes both Wright and Patterson Fields, which were originally Wilbur Wright Field and Fairfield Aviation General Supply Depot. Ohio State Route 444 divides WPAFB into Area A (Patterson Field) to the north and Area B (Wright Field) to the south.

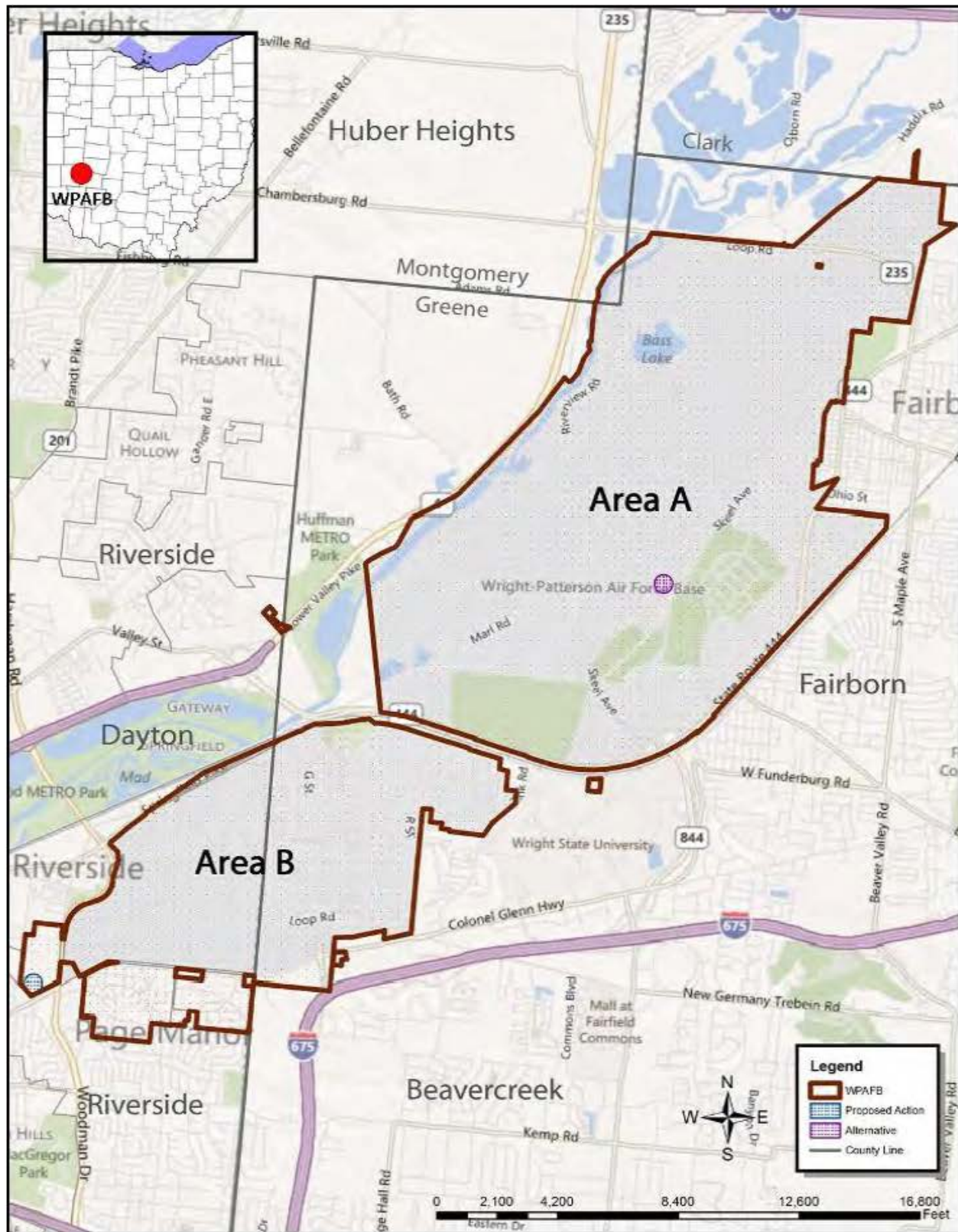


Figure 1-1: Location Map

## **1.3 Environmental Study Requirements**

This section provides a brief summary of the National Environmental Policy Act (NEPA) (42 United States Code [USC] 4321 et seq.), which is the guiding statute for the preparation of this EA, and the policy for interagency and intergovernmental planning that applies to the environmental impact analysis process.

### ***1.3.1 National Environmental Policy Act***

The National Environmental Policy Act is a mandate for federal agencies to utilize a systematic, interdisciplinary approach to environmental planning and decision-making. The intent of NEPA is to minimize adverse impacts to the human environment through available information, evaluating alternative actions, and implementing mitigation measures. The Council on Environmental Quality (CEQ) issued regulations (40 Code of Federal Regulations [CFR] 1500-1508) to implement NEPA that address both the content and procedural aspects of the environmental analysis. This EA is a concise public document intended to provide agency decision makers with sufficient information and analysis to make a finding of no significant impact (FONSI) or decide an environmental impact statement (EIS) is necessary to address significant impacts.

The Air Force regulations for the Environmental Impact Analysis Process (EIAP) (32 CFR 989) provide procedures for the Air Force to achieve and maintain compliance with NEPA and CEQ regulations.

### ***1.3.2 Interagency and Intergovernmental Coordination for Environmental Planning***

Air Force Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) implements the Department of Defense policy for reciprocal exchange of program and planning information with state, regional, and local agencies concerned with environmental planning. The IICEP process aids in identifying potential problems that may interfere with accomplishing the Air Force mission. Similar to the scoping (information-gathering) process of the CEQ regulations, IICEP promotes intergovernmental notification of proposed Air Force actions prior to making any detailed statement of environmental impacts. The correspondence received from the government agencies consulted on the Proposed Action is in Appendix A.

## **1.4 Scope of Environmental Analysis**

The scope of the environmental analysis is based on the environmental resources and issues potentially affected by the Proposed Action and alternatives. The CEQ regulations and guidance and Air Force EIAP regulations emphasize that an EA should be a concise document; thus, this EA focuses on those resources or issues that are appropriate for evaluation in context with the Proposed Action and alternatives.

Internal scoping discussions with WPAFB staff identified environmental, social, and economic resources that are either present in or otherwise considered important to the project area. Scoping discussions and consultations with federal, state, and local resource agencies facilitate an efficient environmental analysis process by identifying resources and issues for full consideration and analysis in the EA, while devoting less attention and time to issues that are not relevant or affected by the Proposed Action and alternatives.

An initial scoping meeting was conducted in August 2011. During this meeting and through subsequent conversations with WPAFB staff, and from review of existing data, the following environmental resources and issues were discussed:

- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Hazardous Materials and Waste/Environmental Restoration
- Land Use
- Noise and Air Installation Compatible Use Zone
- Occupational Safety and Health
- Socioeconomics, Environmental Justice
- Transportation and Infrastructure
- Visual Resources
- Water Resources

The resources or issues identified as potentially affected by the Proposed Action or alternatives are air quality, biological resources, cultural resources, geology and soils, hazardous materials and waste/environmental restoration sites, occupational safety and health, transportation and infrastructure, water resources, and visual resources. These resources are described in Chapter 3 Affected Environment, and the potential impacts to these resources and any necessary mitigation measures are evaluated in Chapter 4 Environmental Consequences.

Resources not in the project area or not affected by the Proposed Action or alternatives are not described in detail in Chapters 3 or 4. As determined through the scoping process with WPAFB staff and consultation with agencies, the issues not evaluated in detail are land use, noise, socioeconomics, and environmental justice. Table 3-1 at the beginning of Chapter 3 provides the rationale for excluding detailed analysis of these issues.

## **DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES**

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## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This section describes the Proposed Action and alternatives considered for siting the Radar Tomography Range. There were four sites identified that would meet the space, infrastructure, and access requirements for the Tomography Range. Figure 2-1 shows the locations of these sites.

The Air Force must analyze a reasonable range of alternatives to the Proposed Action. Reasonable alternatives are those considered feasible or practical to implement from a technical, environmental, and economic standpoint, and for the most part, meet the purpose and need for the project. In accordance with 32 CFR 989.8(c), developing selection criteria is an effective mechanism for identifying, comparing, and evaluating reasonable alternatives. Criteria are developed consistent with the purpose and need for the action and to address pertinent environmental, safety, and health factors. The criteria used to identify reasonable alternatives and locations for evaluation in this EA included:

**Consistent with AFRL/RV Tomography Mission.** The mission of AFRL/RV is to lead the discovery, development, and integration of affordable sensor and countermeasure technologies for warfighters. To support this mission, the Air Force must have the appropriate area and core technology areas including radar, active and passive electro-optical targeting systems, navigation aids, automatic target recognition, sensor fusion, threat warning, and threat countermeasures.

**Adequate Space and Infrastructure to Accommodate New Facilities.** The site must provide adequate developable land to accommodate the tower arrangement, tower foundations, and storage facility/operations building for the Tomography Range to function correctly. The site must provide safe and efficient connectivity to existing utilities.

**Comply with the General Plan for Wright-Patterson AFB.** Construction of the new Tomography Range must not conflict with the General Plan for WPAFB. The planned land use for the site must allow activities and foreseeable development associated with the Proposed Action and be compatible with desired future conditions. The antenna tower ring should not disrupt any existing activities adjacent to the site.

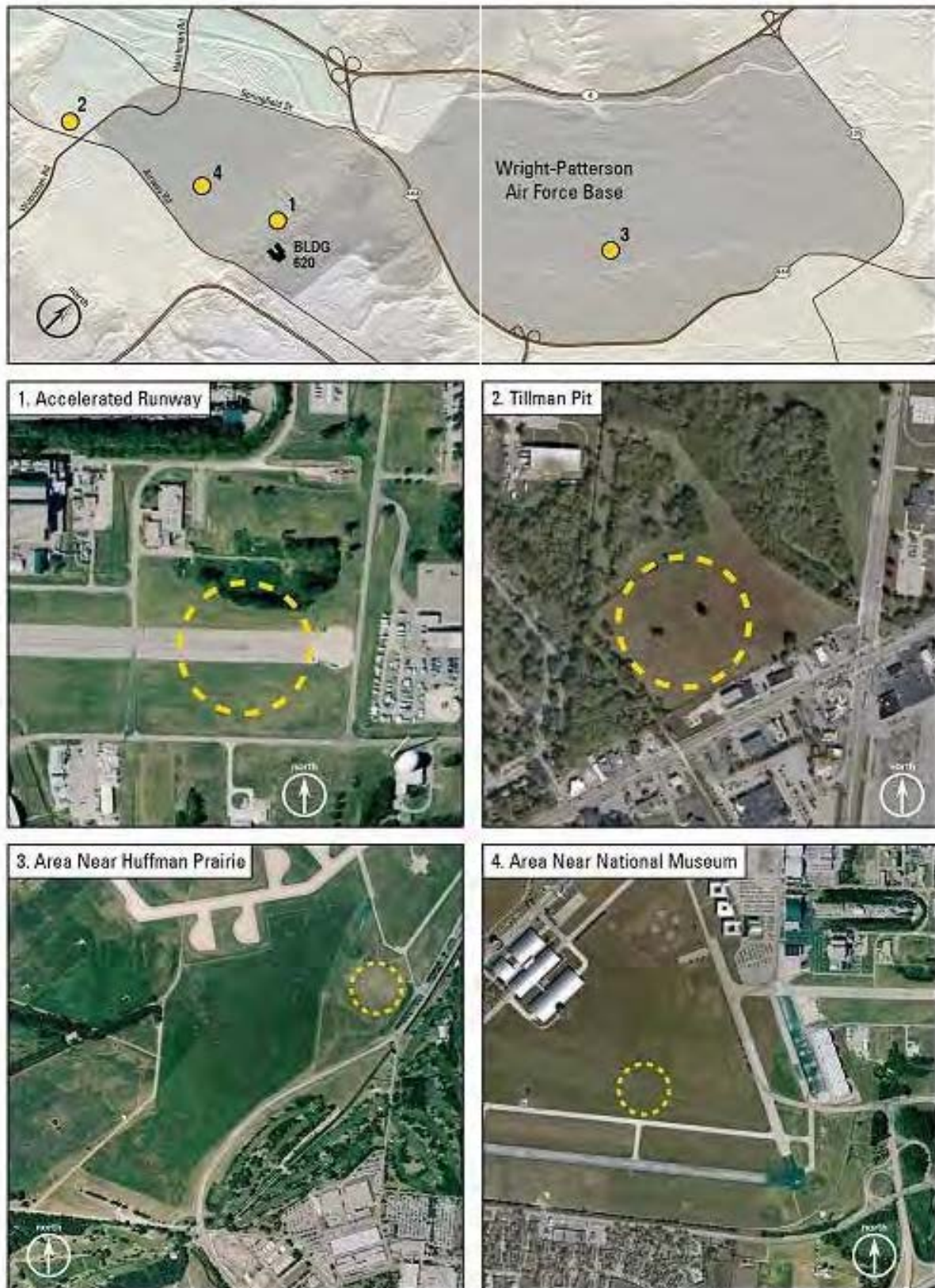
**Access.** The site must allow for safe vehicular access and provide minimal impacts on existing traffic flow at WPAFB. Any new access to the Tomography Range should not impede traffic flow and/or obstruct circulation along the adjacent road network.

The four sites identified that would meet the needs of the Tomography Range were screened against the criteria described above and information from previous planning documents and environmental and technical considerations. The Tillman Pit area is the preferred location and therefore addressed as the Proposed Action.

### 2.1 Proposed Action

The BRAC decisions consolidated the Sensors Directorate at WPAFB. As of September 2011, WPAFB personnel traveled on temporary duty to work at the Tomography Range at Rome Research Site, New York. The Sensors branches from Rome Research Site have since moved to WPAFB, and therefore, the antenna tower ring must relocate to WPAFB to continue the Sensors Directorate tomography mission.







### 2.1.1 Description

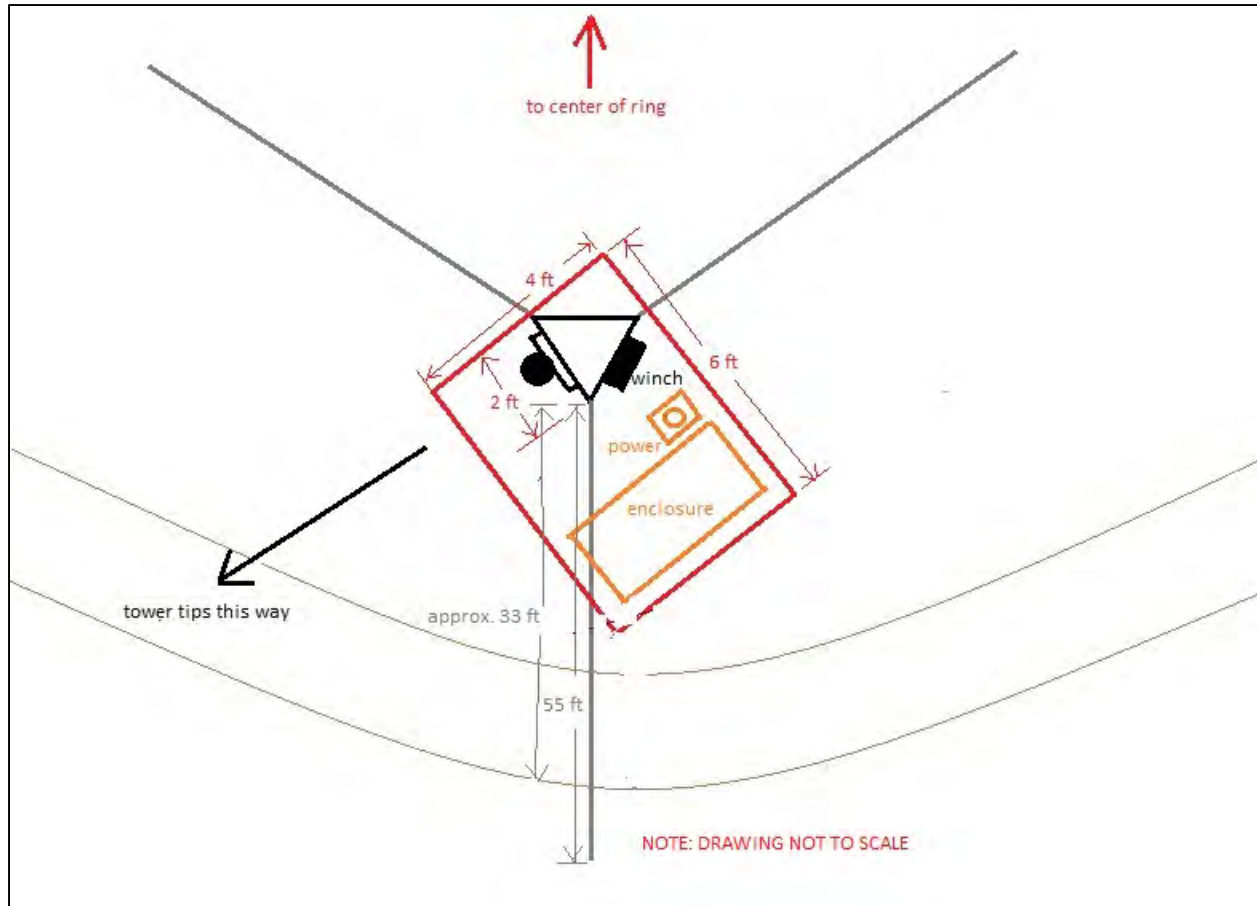
The Proposed Action includes installing 12 antenna towers in a circular pattern to create a tower ring. Each tower is 50 feet (ft) tall on a concrete foundation 4 ft by 6 ft and anchored to the ground by guy wires. The concrete foundation for each tower would be at least 2 ft below ground surface. The tower ring is 200 meters (approximately 650 ft) in diameter. The Tomography Range footprint requires approximately 3 acres. Figure 2-2 shows a similar configuration of an antenna tower ring. Figure 2-3 shows a top-down view of a typical tower foundation and antenna arrangement.

The equipment storage facility (hereinafter “operations building”) design is wood frame on a 30 ft x 50 ft concrete pad and placed approximately 300 ft from the tower ring. The interior space is a laboratory for radar testing and a garage/storage area. Electric power, fiber optic lines, security lighting, lightning protection, access and maintenance roads, and parking space support operation and maintenance of the range. The building and tower ring would not be connected to sanitary sewer, water, or natural gas. There would be 4 to 6 people conducting tests at the range 2 to 4 times a month.

A circular gravel road constructed around the perimeter of the tower ring would provide access to the antennas for installation and maintenance. Another gravel road would extend from the operations building to the center of the tower ring. Layout of the building and road would provide room to unload and turn around a tractor-trailer. A small gravel area behind the building would provide parking for personal and government vehicles. The area on the side of the building opposite the antenna range would be temporary storage for oversize equipment, trailers, tower segments, and other materials.



**Figure 2-2: Example Tomography Range Antenna Tower Ring**



**Figure 2-3: Top-down View of Antenna Tower and Foundation**

### 2.1.2 Location

The Tillman Pit area is the preferred location to install the Tomography Range. This site is in the southwest corner of Area B and is bordered by Airway Road and a mixture of residential and commercial property to the south; Woodman Drive/Harshman Road (hereinafter “Harshman Road”) to the east; Lilly Creek to the north; and Creekside Trail to the west. The site is approximately 13 acres, currently vacant, and large enough to construct the tower ring and operations building with no demolition or relocation required.

This location is within the line of sight of the antenna towers located near the Sensors Directorate Facility (F) 20620, which is approximately 12,500 ft away. Line of sight is not a strict requirement for the tomography mission, but it provides the opportunity to conduct a much larger range of experiments. Line of sight allows the proponent to leverage the outdoor range with the concrete tower radio frequency and elect-optical hardware assets located at F/20620 as additional nodes and illuminators. The opportunity to conduct these additional experiments and measurements is greatly positive, particularly in times of constrained budgets.

Existing access to the site is through a gate located off Harshman Road, just north of the Airway Road intersection. A new concrete driveway constructed from Harshman Road to the existing gate would be 20 ft wide. This design would allow a vehicle to pull completely off Harshman Road before passing

through the security gate to the site. Inside the gate, the concrete driveway would transition to a gravel driveway 8 ft wide to the building.

Tillman Pit was originally a gravel pit about 23 acres in size located mostly north of Lilly Creek. From the early 1940s to 1951, the pit operated as a surface dump for general refuse from Area B. The gravel pit/refuse dump closed and the site used as a surficial hardfill disposal area from 1951 to 1975. Wright-Patterson AFB mapped the disposal area (now referred to as Landfill 2) and established a 300-ft buffer where ground-disturbing activity is restricted. The entrance driveway and part of the operations building footprint would be located within the 300-ft buffer of Landfill 2.

## **2.2 Alternative Site Near Huffman Prairie**

A site near Huffman Prairie in Area A was evaluated. Although the site was not optimal in comparison to the Tillman Pit site, it was identified as a reasonable location during the site selection process that marginally met the screening criteria, and is therefore carried through the analysis in this EA. The Tomography Range design and construction would be the same as described in Section 2.1.1 of this EA.

The Huffman Prairie site is located west of Skeel Avenue and the golf course and driving range, north of Hebble Creek Road, east of Pylon Road, and northeast of historic Huffman Prairie Flying Field and Huffman Prairie. Access to the site would be via Skeel Avenue or Pylon Road. The site is flat and vacant with sufficient space for the layout of the antenna tower ring and operations building footprint.

The site is adjacent to Runway 05R/23L, and although the tower height (50 ft) is compatible with the Inner Horizontal Surface height restrictions (150 ft), this location may still be a concern for aircraft operations. The site is within the explosives clear zones of Hot Cargo Pads 1-4 and Stubs 8A and 8B, and therefore, requires Secretary of the Air Force waivers for structures in these clear zones. The antennas would be visible from the Huffman Prairie National Historic Landmark and may require coordination with the National Park Service for visual intrusion impacts.

The Sensors Directorate building (F/20620) in Area B is 14,100 ft away with no direct line of sight between the towers near the building and the Tomography Range at this location. Line of sight allows the proponent to leverage the outdoor range with the towers near F/20620 for the opportunity to conduct additional experiments and measurements with minimal effects on budgets; however, line of sight is not a strict requirement for the tomography mission.

## **2.3 No Action Alternative**

The No Action Alternative is the baseline to which the impacts of other alternatives are compared. The CEQ and Air Force regulations implementing NEPA require the evaluation of taking no action to allow decision makers to compare the impacts of approving or not approving the Proposed Action or an alternative. Although the No Action Alternative may not meet the purpose and need for the project, it must be described and analyzed in the EA.

Under the No Action Alternative, the Tomography Range and Equipment Storage Facility would not be constructed at WPAFB. The evaluated areas would remain vacant as they are today. The tomography mission at Rome Research Site in New York was deactivated because of BRAC decisions and the antenna tower ring no longer exists to support tomography research and development activities. The Sensors Directorate branches from Rome Research Site have relocated to WPAFB, and therefore, the antenna tower ring and services must relocate to WPAFB to continue the Sensors Directorate tomography

mission. The No Action Alternative does not meet the purpose and need of improving sensor and countermeasure technologies for U.S. warfighters by continuing the tomography mission.

## 2.4 Alternative Sites Eliminated from Analysis

Sites were evaluated against the purpose and need for the Tomography Range and on the ability to meet the selection criteria described at the beginning of this chapter. The alternatives were also evaluated against pertinent environmental, safety, and health factors. Alternatives that did not meet the purpose and need for the project, did not accommodate most site selection criteria, or resulted in a fatal flaw because of environmental, safety, or health factors were eliminated from further consideration and analysis of impacts.

Two other sites evaluated for the tomography range were eliminated for specific reasons. These sites are the accelerated runway and a site near the National Museum of the U.S. Air Force (see Figure 2-1).

The accelerated runway site is 5.2 acres located in Area B near 13<sup>th</sup> Street and Skyline Drive. The site is the location of a former runway built during World War II to research the effects gravity had on take-offs and remnants of the old runway are still present. Rebar from the old runway would likely be encountered that would increase construction costs to remove. Extreme slope would require some towers to be taller than 50 ft to maintain the necessary clearance from the antennas to the ground surface. The close proximity to Runway 9/27 would not allow construction of the antenna tower since the 50-ft height restriction covers approximately 60 percent of the site. The antennas must be above the target area in the center of the ring, looking down at the target. The site is also not large enough to accommodate the full-sized tower ring. There would be no setback from the towers to the adjacent roadway and vehicular traffic would disrupt measurements during the testing. These existing conditions make the site not preferable and it was therefore eliminated.

The National Museum site is located in Area B near Runway 9/27 and soccer and baseball fields. Access to this site would be from Loop Road West/Skyline Road. The proximity to the National Museum and the visual effects from the towers made this location unattractive. Museum staff strongly objected to the tower ring at this site. Part of the area needed for the tower ring is in the space obligated for museum expansion and a number of Air Force training events are hosted in the area that would be impacted by the tower ring. The runway adjacent to the site is used by the museum and the 50-ft towers could cause conflict. The museum site would also displace the soccer fields. An oval antenna configuration was considered to avoid the soccer fields, but the radius needed was still too great and would require their removal. The guy wires so close to the soccer fields was also a safety concern. These existing conditions make the site not preferable and therefore eliminated.

## 2.5 Summary of Impacts by Alternative

Table 2-1 compares the potential impacts of resources by alternative. The information summarized in the table is from Chapters 3 and 4.

**Table 2-1: Summary of Impacts by Alternative**

<b>Resource</b>	<b>Proposed Action</b>	<b>Near Huffman Prairie</b>	<b>No Action</b>
<b>Air Quality</b>	Short-term increases in fugitive dust and construction equipment emissions during construction; conforms to PM2.5 State Implementation Plan; no impact on ozone maintenance status	Similar to Proposed Action	No impact
<b>Biological Resources</b>	No adverse effect to listed species; location of antenna towers maintains most existing vegetation; no impact to suitable wildlife habitat; timing of tree removal avoids Indiana bat maternity season	No listed species occur in project area; location of antenna towers would not permanently disturb existing prairie vegetation; no impact to suitable wildlife habitat	No impact
<b>Cultural Resources</b>	No adverse impact on cultural resources	Visual intrusion of viewshed of historic properties would be adverse	No impact
<b>Environmental Justice, Protection of Children</b>	No impact	No impact	No impact
<b>Geology and Soils</b>	Minimal disturbance to surface soils	Similar to Proposed Action	No impact
<b>Hazardous Materials and Waste</b>	Potential to encounter buried waste material; implement procedures for appropriate handling and disposal of waste to maintain integrity of the 300-foot buffer of Landfill 2	No impact	No impact
<b>Land Use</b>	No impact	No impact	No impact
<b>Noise</b>	No impact	No impact	No impact
<b>Health and Safety</b>	Adherence to standards would prevent risks to safety or health; negligible radio wave exposure	Similar to Proposed Action	No impact
<b>Socioeconomics</b>	No impact	No impact	No impact
<b>Transportation and Infrastructure</b>	Temporary increases in construction traffic; no impact to traffic/transportation system; no impact to utility infrastructure	Similar to Proposed Action	No impact
<b>Water Resources</b>	No impact to floodplain, groundwater, or surface water	Similar to Proposed Action; design would meet EISA requirements for storm water runoff	No impact
<b>Visual Resources</b>	No impact	Potential visual impacts to Huffman Prairie National Historic Landmark, Brick Quarters Historic District	No impact

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## **AFFECTED ENVIRONMENT**

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## 3.0 AFFECTED ENVIRONMENT

This chapter describes the existing environment in the project area. The project area is defined as the Tillman Pit, Huffman Prairie area, and the surrounding areas that would likely be affected by installation of the Tomography Range. The existing environmental conditions serve as a baseline for identifying and evaluating potential environmental changes attributable to the Proposed Action and alternative.

Following CEQ regulations, guidance, and Air Force EIAP regulations, the description of the affected environment focuses on those environmental, social, and economic resources and issues potentially subject to impacts. The scope of the environmental analysis, as discussed in Section 1.4, identified resources for detailed evaluation; those affected resources are described in this chapter. Although all resource areas and issues were initially considered, some were eliminated from detailed examination because they were not in the project area or not affected by the Proposed Action or alternative. Table 3-1 lists the resources not evaluated and the rationale for excluding them from analysis.

**Table 3-1: Resources Not Analyzed in Detail**

Resource	Justification
Environmental Justice, Protection of Children	Wright-Patterson AFB must identify and address disproportionately high and adverse effects of projects on the health or environment of minority and low-income populations (EO 12898) and disproportionately high and adverse human health or environmental effects of its activities on children (EO 13045). The Tomography Range would occur within the confines of the Base and would not cause any adverse effects, and therefore, any low income or minority populations or children that may reside outside the confines of WPAFB would not be disproportionately or adversely affected.
Socioeconomics	Socioeconomic factors describe the local economy, employment, and demographics that may be influenced by the Proposed Action. There would be no changes to the local economy, employment, and demographics. In addition, there would be no construction-related or operation-related gains for employment and the economy.
Land Use	The Proposed Action is compatible with the General Plan for WPAFB, which was one of the site selection criteria. The preferred site is currently vacant and occasionally used for bow hunting. The site is bound to the south by commercial development. The Proposed Action location is consistent with the General Plan and a change in land use designation is not required.
Noise	The Tomography Range would not introduce any new source of noise to the area during construction or operation. The Tillman Pit site is located within the 65-70 day-night average sound level noise contours. This site is an urbanized area that is adjacent to off Base commercial buildings and is at the intersection of two major arterials (Airway Road and Harshman Road). The area near Huffman Prairie is adjacent to Runway 05R/23L and would not experience any increase in noise disturbance.

## 3.1 Air Quality

### 3.1.1 Definition of Resource

The National Ambient Air Quality Standards (NAAQS), established by the U.S. Environmental Protection Agency (EPA) and adopted by the Ohio EPA Division of Air Pollution Control, define the maximum

allowable concentrations of pollutants that may be reached but not exceeded within a given time period. The standards were selected to protect human health with a reasonable margin of safety. The ambient standards are for the criteria pollutants of carbon monoxide, nitrogen dioxide, ozone, lead, particulate matter (PM), and sulfur dioxide. Particulate matter is further defined by size – less than 10 microns in diameter (PM<sub>10</sub>) and smaller than 2.5 microns in diameter (PM<sub>2.5</sub>). While ozone is a regulated pollutant, it is not emitted directly from sources but is formed by a combination of nitrogen oxides and volatile organic compounds reacting with sunlight in the atmosphere. Exceeding concentration levels within a given time period is a violation of the NAAQS and constitutes nonattainment of the criteria. A federally enforceable State Implementation Plan (SIP) is required for areas of nonattainment and an EPA approved maintenance plan is required when an area is reclassified from nonattainment to attainment.

### ***3.1.2 Existing Conditions***

#### **Climate**

The climate in this region of Ohio is continental, characterized by a relatively large range of seasonal variability with cold winters and warm, humid summers. Climate data from a weather station in Greene County show January is the coldest month with a normal mean temperature of 28 degrees Fahrenheit (°F) and July is the warmest month with a normal mean temperature of 73°F (MRCC, 2011a). Average annual precipitation is 40 inches with February the driest month and May the wettest (MRCC, 2011b).

#### **Local Air Quality**

Wright-Patterson AFB is located in the Dayton-Springfield Air Quality Control Region that is in attainment of NAAQS except for the annual PM<sub>2.5</sub> standard (EPA, 2012). The EPA recently took final action “determining that the Dayton-Springfield area has attained the 1997 annual average PM<sub>2.5</sub>” effective October 14, 2011 (Federal Register, 2011). However, this action does not constitute an attainment status redesignation nor does it involve acceptance of the State’s maintenance plan. The SIP for PM<sub>2.5</sub> was revised in 2010 and remains in effect, although some obligations under the SIP are suspended by this most recent EPA action. The area is currently in attainment of the 8-hour ozone standard with a maintenance plan in effect until 2017 (OEPA, 2007).

#### **Emissions at Installation**

Wright-Patterson AFB is classified as a major source of air pollution under Title V of the Clean Air Act. A major source has the potential to emit more than 100 tons per year (tpy) of any one criteria pollutant, 10 tpy of a hazardous air pollutant, or 25 tpy of any combination of hazardous air pollutants. Wright-Patterson AFB operates several hundred air emission sources, listed as both insignificant and significant sources in the Title V permit. A renewal application for the Title V permit submitted in July 2008 is pending (Erdei, 2012).

Wright-Patterson AFB reports greenhouse gas emissions. In 2011, direct greenhouse gas emissions from onsite combustion or release totaled 143,156 metric tons carbon dioxide equivalent, which was mostly from the coal boilers (WPAFB, 2011).

## 3.2 Biological Resources

### 3.2.1 Definition of Resource

Biological resources include native or naturalized plants and animals and the habitats, such as wetlands, woodlands, and grasslands in which they exist. Sensitive and protected biological resources include plant and animal species listed as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) or by the Ohio Department of Natural Resources.

### 3.2.2 Existing Conditions

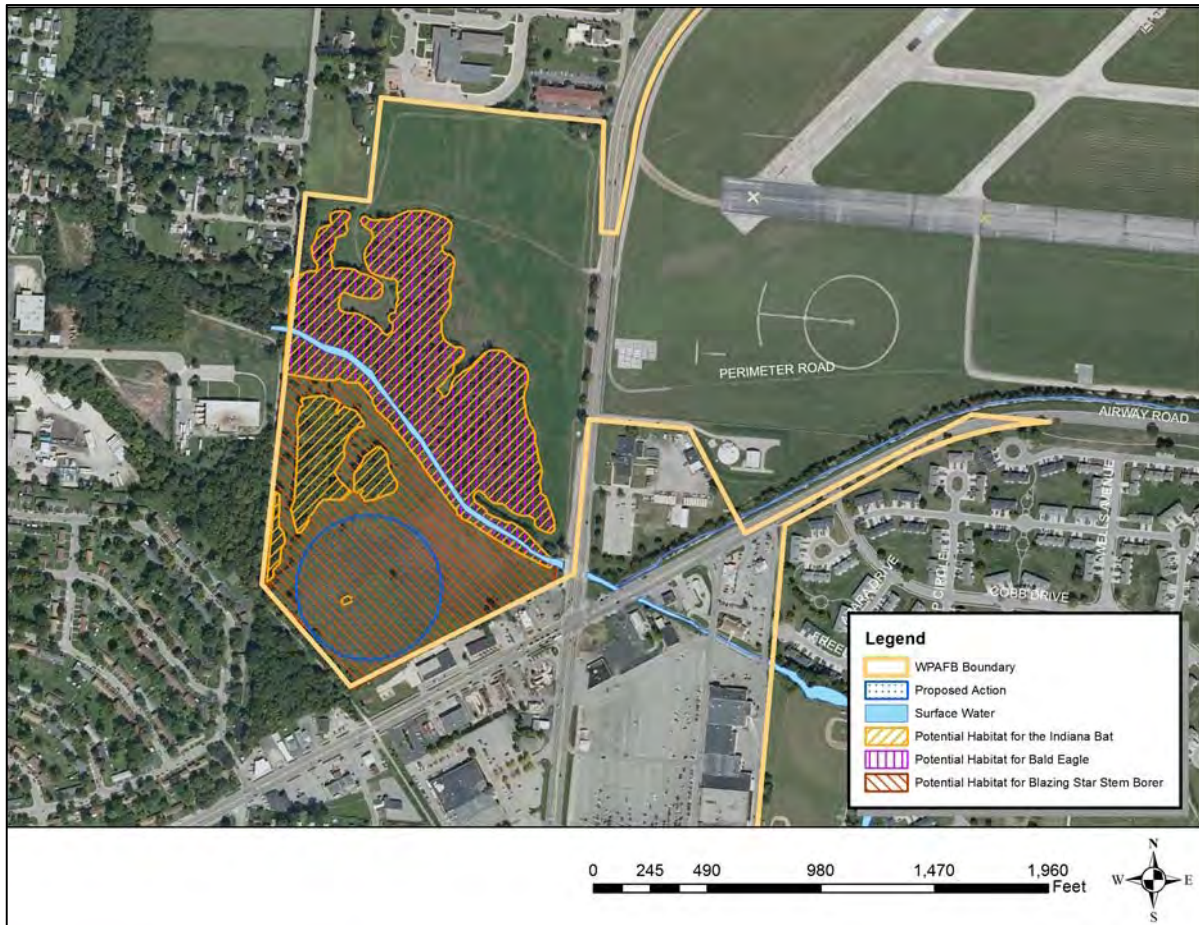
Four federally listed endangered species are known to occur on WPAFB, including the Indiana bat (*Myotis sodalis*), clubshell mussel (*Pleurobema clava*), snuffbox mussel (*Epioblasma triquerta*), and rayed bean mussel (*Villosa fabalis*). The eastern massasauga rattlesnake (*Sistrurus catenatus catenatus*), a federal candidate species, may also occur on WPAFB. Based on the Integrated Natural Resources Management Plan (WPAFB, 2007) and a review of the February 2012 list of protected species for Greene and Montgomery counties (USFWS, 2012), no other threatened, endangered, proposed, or candidate species are known to occur in the project areas. No critical habitat is designated or proposed for designation on the Base (WPAFB, 2007). A search of the Biodiversity Database maintained by the Ohio Department of Natural Resources indicated the Indiana bat and eastern massasauga rattlesnake have occurred within a one-mile radius of the sites.

Although the bald eagle (*Haliaeetus leucocephalus*) is no longer listed as a federal endangered species, it receives special protection under other federal laws including the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Bald eagles could potentially roost in any suitable tree on WPAFB, including trees north of the Tillman Pit area (see Figure 3-1), but would most likely be found near open water bodies. Although there are no records of bald eagles nesting on WPAFB, a pair of eagles began nesting near the Mad River in 2009 at the City of Dayton well field west of Harshman Road. That nest site is over 3 miles to the north of the Tomography Range sites.

The Tillman Pit area is categorized as an old field (WPAFB, 2007). Old fields on WPAFB are relatively treeless communities dominated by grasses, herbaceous plants, and shrubs and lack the plants and structure characteristic of native prairie. Dominant plants found in old field communities include brome grass (*Bromus*, spp.), goldenrod (*Solidago* spp.), ironweed (*Vernonia* spp.), and some woody species. Dandelion (*Taraxicum officinale*), English plantain (*Plantago lanceolata*), and common plantain (*Plantago major*) are common in mowed areas.

The blazing star stem borer (*Papaipema beeriana*), a moth, is state listed as endangered but is not federally listed. The only known food plant of the moth is blazing star (*Liatris spicata*). Huffman Prairie is the primary suitable habitat for the moth on WPAFB. Because *L. spicata* plants have been observed in other fields on WPAFB, old fields on the Base, including the Tillman Pit area (see Figure 3-1) may provide suitable habitat for the moth (WPAFB, 2007).

Huffman Prairie is one of the largest remnants of native prairie in Ohio and covers 109 acres in Area A. Dominant native grasses on this prairie include Indian grass (*Sorghastrum nutans*), big bluestem (*Andropogon gerardii*), and little bluestem. At least 23 species of prairie indicator plants are found in or near Huffman Prairie. While native prairie vegetation is present, introduced forage grasses and non-native herbaceous plants have established in Huffman Prairie. Portions of Huffman Prairie are severely degraded



**Figure 3-1: Biological Resources At Tillman Pit**

due to a high proportion of non-native plants and altered drainage (WPAFB, 2007). Efforts to monitor and restore Huffman Prairie have been ongoing since 1990. The alternative site near Huffman Prairie is a treeless community dominated by characteristic grasses (see Figure 3-2). Due to the proximity to Runway 05R/23L, this area is mowed, includes forage grasses and non-native species, and has altered drainage patterns.

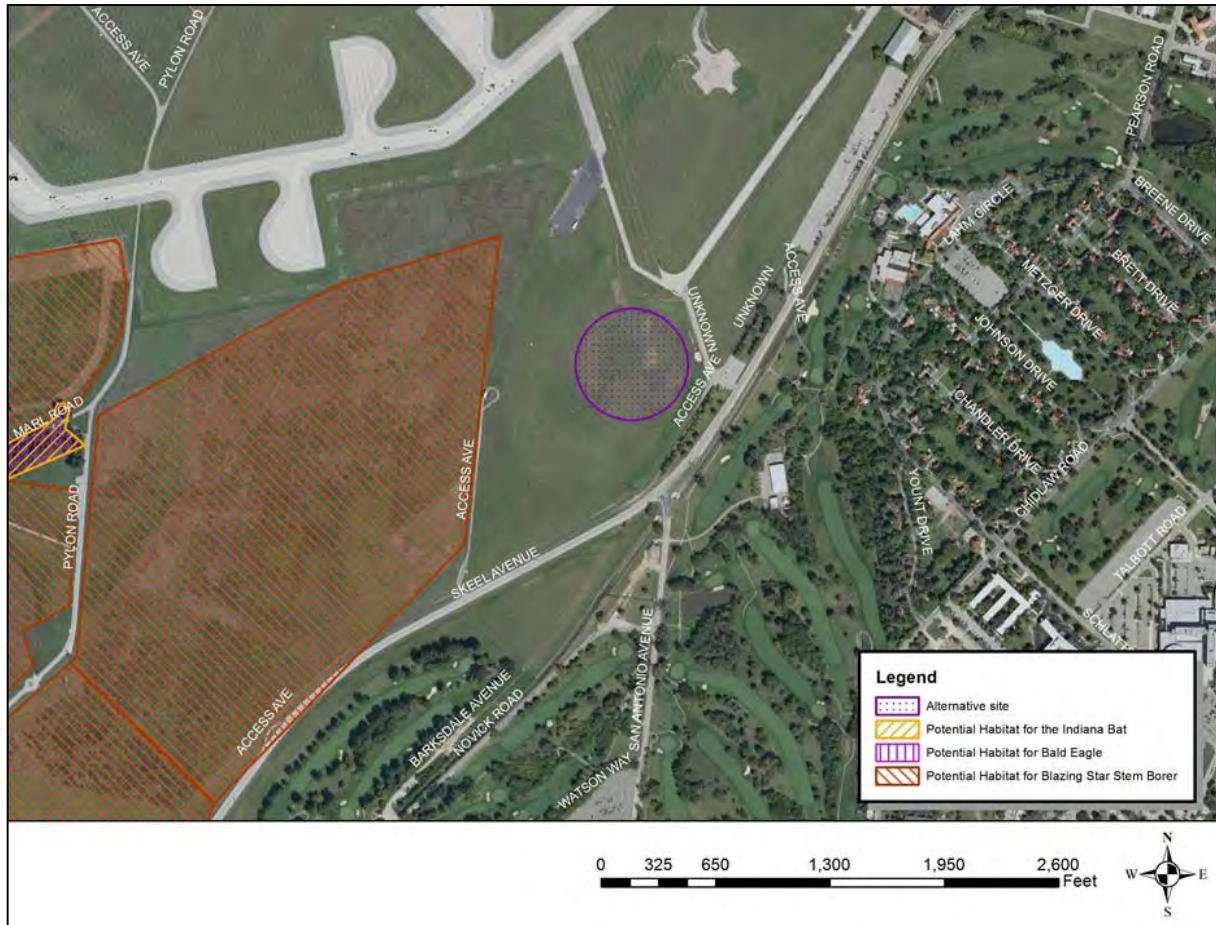
### 3.3 Cultural Resources

#### 3.3.1 Definition of Resource

Cultural resources are defined as properties that possess significant information in areas relating to archaeology, architecture, engineering, history, and culture. Cultural resources can be prehistoric or historic sites where physical evidence gives clues to human activity. Archaeological resources are often related to Native American activity and European settlement. Architectural resources refer to the buildings, structures, landscapes, and objects that are of aesthetic and/or historical significance.

Authorized by the National Historic Preservation Act of 1966, the National Register of Historic Places provides the standards and methods for identifying and evaluating cultural resources by age, integrity, and significance. A property must maintain an adequate level of historical integrity for inclusion in the





**Figure 3-2: Biological Resources Near Huffman Prairie Alternative Site**

National Register. Some level of integrity must be present in terms of location, design, setting, materials, workmanship, association, and feeling. A minimum 50-year threshold is required for properties considered to be of historic age and listing in the National Register.

### 3.3.2 Existing Conditions

Wright-Patterson AFB has participated in ongoing compliance with Section 110 of the Historic Preservation Act by identifying and evaluating cultural resources as part of the Integrated Cultural Resources Management Plan (ICRMP). Wright-Patterson AFB has worked closely with and received concurrence from the Ohio State Historic Preservation Office (SHPO) in updating the ICRMP. As new undertakings, construction projects, and ground disturbances are proposed, the cultural resources inventory within the ICRMP is referenced to minimize or avoid adverse effects to identified resources in accordance with Section 106 of the Act.

Numerous cultural resources are located on WPAFB, including at least 256 eligible and/or contributing historic buildings, 17 identified prehistoric sites, 17 historical sites, 5 historic landscapes, and 3 historic districts.

Wright-Patterson AFB has a rich history in aviation and military innovation. As buildings at WPAFB reach the 50-year mark, their integrity and significance are evaluated for eligibility for the National Register. Wright-Patterson AFB has evaluated all facilities constructed before 1962 and is in the process of evaluating facilities constructed between 1962 and 1966. Facilities that are directly associated with national efforts throughout the Cold War are given special consideration to identify those properties that have achieved significance within the past 50 years. There are 17 facilities identified as individually eligible for the National Register for Cold War Significance (Labat, 2011).

## **3.4 Geology and Soils**

### **3.4.1 Definition of Resource**

Geological resources include the physical surface and subsurface features including landforms, topography, soils, minerals, and hazards.

### **3.4.2 Existing Conditions**

There are no unique geological features on WPAFB. Surface soil at WPAFB formed on unconsolidated deposits, primarily alluvium, glacial outwash, glacial till, and loess. Development and substantial earthmoving activities have altered the natural soil characteristics at WPAFB, making precise classifications difficult. The Natural Resources Conservation Service (previously Soil Conservation Service) mapped most of the Base as urban land complexes, with the Warsaw-Fill land complex as the most common. (WPAFB, 2007; NRCS, 2010)

The soil types in the Tillman Pit area are silty clay and silt loams of floodplain depressions. These soil complexes are very poorly drained with a very shallow depth to water table. The Warsaw-Fill land complex that covers the Huffman Prairie site is well drained and nearly flat. The fill land is expected because of the site's proximity to the flightline.

## **3.5 Hazardous Materials and Waste Management**

### **3.5.1 Definition of Resource**

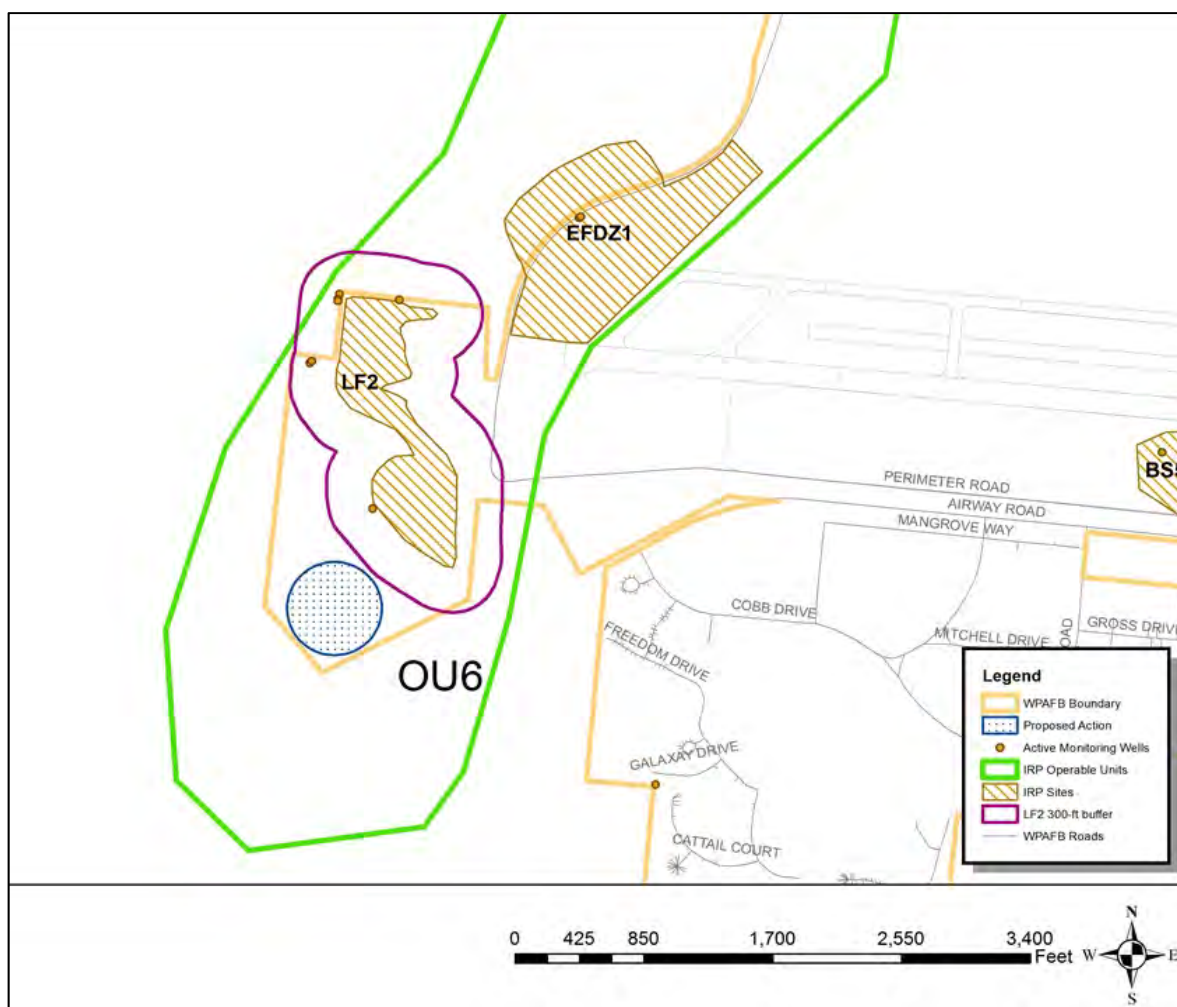
In general, both hazardous materials and wastes are substances that, if released or improperly managed, may present a danger to public health or safety or to the environment because of their quantity, concentration, or characteristics.

### **3.5.2 Existing Conditions**

The 88 ABW maintains a Hazardous Waste Management Plan that prescribes the roles and responsibilities of WPAFB staff for hazardous waste inventory, analysis, procedures, training, emergency response, and pollution prevention. The plan establishes the procedures to comply with applicable federal, state, and local regulations for hazardous waste management.

The Environmental Restoration Program requires WPAFB to identify, investigate, and clean up hazardous waste disposal or release sites. Wright-Patterson AFB entered into a Consent Order with the Ohio EPA and was placed on the National Priorities List in 1989. Confirmed or suspected sites requiring investigation and characterization are grouped into 11 geographically based operable units (OUs).

Tillman Pit area falls within OU6, which is comprised of two landfills (LF1 and LF2) and one earth-filled disposal zone (EFDZ 1). Figure 3-3 shows the location of Tillman Pit in reference to OU6. Tillman Pit was originally a gravel pit about 23 acres in size located mostly north of Lilly Creek. From the early 1940s to 1951, the pit operated as a surface dump for general refuse from Area B. Refuse was placed into gravel pits in direct contact with groundwater. The gravel pit/refuse dump closed and the site was used as a surficial hardfill and construction debris disposal area from 1951 to 1975. Due to the history of this site and the potential for ecological risk, the landfill was capped under EPA guidance. Wright-Patterson AFB mapped the disposal area (now referred to as Landfill 2) and established a 300-ft buffer where ground-disturbing activity is restricted without authorization from Ohio EPA. Limited recreational/industrial use of the land at this site reduces the risk to people, plants, and animals that visit/inhabit this area.



**Figure 3-3: OU6 Sites Near Tillman Pit**

The area near Huffman Prairie is not within any OU and is not within any buffer of an EFDZ. There are no known or identified hazardous waste sites identified near the Huffman Prairie site (see Figure 3-4).



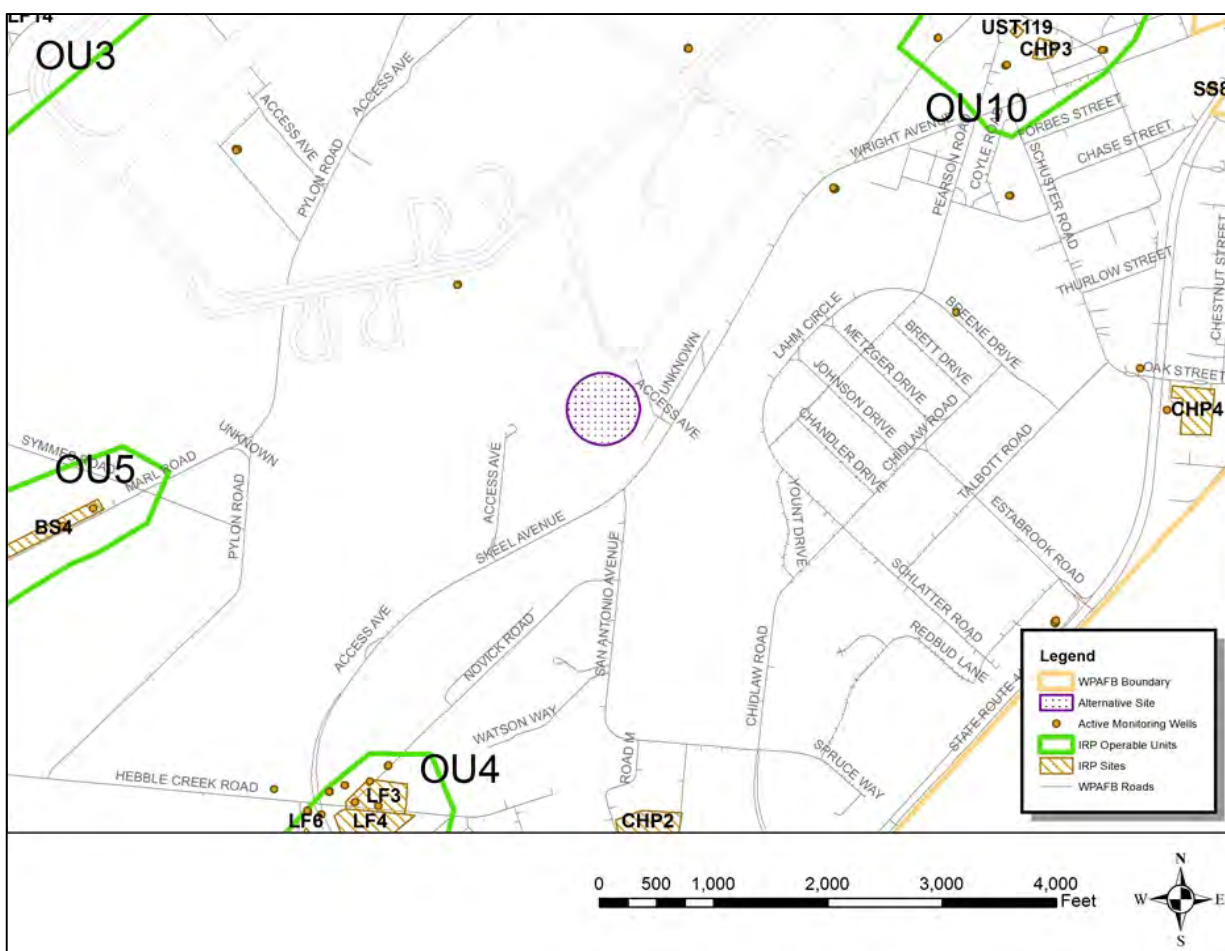


Figure 3-4: OU Locations Near Huffman Prairie Site

Various types of solid wastes are generated by the numerous tenants and organizations located at WPAFB. Solid wastes generally include household trash, office products and trash, packing materials, construction debris. After recycling efforts are applied, approximately 50 to 75 percent of the municipal solid waste generated at WPAFB is disposed mostly via landfill with a small fraction incinerated. Solid waste accumulated in containers is hauled by contractor to an off Base landfill (Stony Hollow Landfill) in Dayton.

### 3.6 Health and Safety

#### 3.6.1 Definition of Resource

Risks to health and safety of workers and the public can include construction hazards, physical and chemical hazards, radiation, explosives, and bird and wildlife hazards to aircraft. Necessary elements for an accident or environmental risk include the presence of the hazard itself together with an exposed population. For non-chemical hazards, the degree of exposure depends primarily on the proximity of the hazard to the population. The Occupational Safety and Health Act (OSHA) is the guiding legislation for protection of workers.

### **3.6.2 Existing Conditions**

The Bio-environmental Engineering Flight and Base Safety are responsible for implementing Air Force Occupational Safety and Health (AFOSH) standards for WPAFB military personnel and civilian employees. Some programs AFOSH addresses include hazard abatement, hazard communication, training, personal protective equipment, and other controls to ensure that occupational exposures to hazardous agents do not adversely affect health and safety.

Construction site safety is largely measured by adherence to regulatory requirements imposed for the benefit of employees and using practices that reduce risks of illness, injury, death, and property damage. Health and safety of onsite military and civilian workers are safeguarded by Air Force regulations, such as Air Force Instruction 91-202, *Air Force Mishap Prevention Program*, August 1, 1998. Operational risk management is integrated into all Air Force operations and missions to ensure compliance with OSHA and AFOSH standards. These standards specify the amount and type of training required for industrial workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits for workplace stressors. The Air Force standards also address protection from occupational noise exposure compliant with OSHA's established noise exposure standards.

## **3.7 Transportation and Infrastructure**

### **3.7.1 Definition of Resource**

Transportation and infrastructure consist of the systems and physical structures that enable a population in a specified area to function. The availability of infrastructure and its capacity to support growth are generally regarded as essential to economic growth of an area.

### **3.7.2 Existing Conditions**

Tillman Pit is accessible from the east by Harshman Road. Harshman Road, which becomes Woodman Drive at the Airway Road intersection, is a four-lane primary arterial that separates Tillman Pit from the main part of WPAFB. Harshman Road has an extra wide shoulder from Lilly Creek to the Airway Road intersection. Figure 3-5 shows this extra wide shoulder at the existing gated access to Tillman Pit by Lilly Creek. The gated access to Tillman Pit at this location is for mowers and maintenance equipment.

Traffic counts are collected by the Miami Valley Regional Planning Commission. The annual average daily traffic from 2005 on Harshman Road near this location was 32,800 vehicles per day. A popular walking/biking trail, Creekside Trail, is along the western edge of Tillman Pit. A security fence and row of trees separate Tillman Pit from the trail (see Figure 3-6).

Huffman Prairie abuts Skeel Avenue to the east. Skeel Avenue is a two-lane roadway through Area A connecting Gate 15A to Loop Road. An existing parking lot used for accessing the asphalt trail that parallels Skeel Avenue is adjacent to the site (see Figure 3-7). Wright-Patterson AFB personnel primarily use this trail for exercise and as a connector between Base locations.

Utility infrastructure at or near the Tillman Pit site includes an underground natural gas main (Vectren Corporation) and overhead electrical lines (Dayton Power and Light) along the southern property line and behind the commercial buildings along Airway Road (see Figure 3-6). Wright-Patterson AFB water and sewer lines do not extend to Tillman Pit. The site near Huffman Prairie is in close proximity to Runway 05R/23L. Most utilities pass in or near this area.



Figure 3-5: View of Extra Wide Shoulder Along Harshman Avenue



Figure 3-6: Location of Creekside Trail Near Tillman Pit





Figure 3-7: Location of Base Trail Near Huffman Prairie Site

## 3.8 Visual Resources

### 3.8.1 Definition of Resource

Visual resources are the physical and biological features that contribute to the scenic quality or visual character of the landscape and the visual appeal or sensitivity of an observer.

### 3.8.2 Existing Conditions

Tillman Pit is located at the less developed southwest corner of WPAFB and screened from view by adjacent land uses on three sides by trees. It is located at a busy intersection of two major arterials (Airway Road and Harshman Road) and private commercial buildings are along the south property line. Overhead power lines, security lights, and commercial signs are observed at the intersection. The view of Tillman Pit from Harshman Road is only from the entrance gate as the riparian corridor along Lilly Creek blocks the view. The commercial development blocks the view from Airway Road.

The area near Huffman Prairie is visible from Skeel Avenue, the WPAFB Trail, and the golf course. The site has expansive views across the flightline and Huffman Prairie, which is one of the largest remnants of native prairie in Ohio. The site is visible from Huffman Prairie National Historic Landmark.

## **3.9 Water Resources**

### **3.9.1 Definition of Resource**

Water resources include surface water, groundwater, and floodplains. Evaluation of water resources examines the quantity and quality of the resource and demand for it for various purposes.

### **3.9.2 Existing Conditions**

The Mad River and its tributaries (Hebble Creek, Trout Creek, and Mud Run) are the primary surface water resources on WPAFB. In Area A, surface water drains toward the named tributaries. Area B is drained by an unnamed tributary and storm water drains to Lilly Creek, which all eventually empty into the Mad River. (WPAFB, 2007a)

Lilly Creek is a perennial tributary of the Mad River that flows adjacent to Tillman Pit. Hebble Creek is parallel to Skeel Avenue near the site at Huffman Prairie. It is a perennial tributary of the Mad River that generally flows west through the City of Fairborn into WPAFB where it becomes channelized and is eventually directed into the Mad River.

Wright-Patterson AFB has a Storm Water Pollution Prevention Team to manage storm water issues and prevent pollution. The Base implements a Storm Water Management Plan, a base-wide Storm Water Pollution Prevention Plan (SWP3), and construction site-specific SWP3s to comply with applicable federal and state regulations

The water table aquifer in the area of WPAFB is part of the Great Miami/Little Miami Buried Valley Aquifer System (WPAFB, 2007a). Groundwater flow in and around Area A of WPAFB is much like the surface water drainage basin, which mostly follows the tributaries to the Mad River. The groundwater flow pattern through Area B is created by a bedrock ridge that trends northwest from the southeast corner of Area B to Huffman Dam (WPAFB, 2007a). Groundwater in Area B occurs at depths ranging from just below the surface to 35 feet below ground surface (WPAFB, 2007a).

Groundwater monitoring data is collected to evaluate the trends in the organic and inorganic chemicals of concern in the groundwater and to evaluate the progress of ongoing remedial actions throughout WPAFB. Wright-Patterson AFB is committed to restoring environmental quality where groundwater resources had been impacted by contaminant migration.

Tillman Pit is below Huffman Dam and within the 100-year floodplain of Lilly Creek. This location is at an elevation of approximately 788 feet mean sea level. The area near Huffman Prairie is not within any floodplain of Mad River tributaries.

Wetlands are protected by federal and state regulation and Executive Order 11990. Wright-Patterson AFB updated the Wetland and Stream Management Plan in 2009 (WPAFB, 2009). Wetlands are not identified at or near the Tillman Pit area or the site near Huffman Prairie.

## **ENVIRONMENTAL CONSEQUENCES**

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## 4.0 ENVIRONMENTAL CONSEQUENCES

This chapter presents an evaluation of the environmental consequences or impacts that might result from implementing the Proposed Action or alternatives. The specific criteria for evaluating impacts and assumptions for the analyses are presented for each resource. Evaluation criteria are generally based on federal, state, or local agency regulations and guidelines. Environmental commitments and best management practices are proposed, as appropriate, to minimize potential impacts.

Impacts are defined in general terms and are qualified as adverse or beneficial, and as short-term or long-term. There may be construction-related impacts to certain resources. Such impacts are generally addressed by best management practices or permits required by federal, state, or local regulations to minimize or control the adverse effects of construction. Construction-related impacts are generally temporary, short-term, and cease after construction is complete, whereas operational impacts are generally permanent, long-term, and begin or continue after construction is complete.

### 4.1 Air Quality

#### 4.1.1 Evaluation Criteria

In attainment areas, an impact is considered significant if the net increase in pollutants causes or contributes to a violation of the NAAQS, exposes sensitive receptors to substantially increased pollutant concentrations, or exceeds any evaluation criteria established by a SIP. In nonattainment areas, emission increases are considered significant if they cause or contribute to a new violation of a NAAQS, increase the frequency or severity of a violation of NAAQS, or delay the attainment of any standard or other milestone contained in the SIP such that the project would not conform to the SIP.

#### 4.1.2 Proposed Action

Because WPAFB is located in a nonattainment area for PM<sub>2.5</sub> and a maintenance area for ozone, a conformity applicability analysis is required to determine whether the Proposed Action is subject to the general conformity requirements of the Clean Air Act. A conformity determination is required if the total direct and indirect emissions equal or exceed the de minimis threshold of the pollutant and any precursors. The de minimis threshold for PM<sub>2.5</sub> and ozone precursors is 100 tpy (40 CFR 93.153 (b)(1) and (b)(2)).

Fuel combustion in construction equipment and worker vehicles would increase volatile organic compounds, nitrogen oxides, and carbon monoxide emissions in the short term. Due to required vehicular emission controls, these are expected to be negligible and do not warrant a detailed emissions estimation. Air emissions would result from construction activities associated with the 30 ft x 50 ft (1,500 square feet) operations building and associated parking area, the tower foundations, and the access roads for the Tomography Range. Particulate emissions would be generated primarily from site preparation and grading during construction, which are expected to last six months.

Total suspended particulates resulting from construction of the operations building, tower foundations, and the gravel roads were calculated using the emission factor for heavy construction activity operations from AP-42 Compilation of Air Pollutant Emission Factors (EPA, 1995) to provide a conservative estimate of PM<sub>10</sub> and PM<sub>2.5</sub> emissions. Table 4-1 shows the calculation assumptions and results.



**Table 4-1: Estimated Emissions of Particulate Matter**

Facility	Area (square feet)	Area <sup>1</sup> (acres)	Project Duration (months)	TSP Emission Factor <sup>2,3</sup> (tons/acre/month)	Control Efficiency <sup>4</sup> (%)	Estimated Emissions <sup>5</sup> (tons)
Tower Foundations <sup>6</sup>	6,912	0.2	6	1.2	80%	0.2
Operations Building <sup>7</sup>	3,000	0.1	6	1.2	80%	0.1
Circular Road <sup>8</sup>	16,480	0.4	6	1.2	80%	2.7
Access Roads <sup>9</sup>	26,240	0.6	6	1.2	80%	4.3
Total		1.3				7.4

<sup>1</sup> Entire area estimated though not all of area exposed for the entire project duration; rounded to nearest tenth.

<sup>2</sup> Emission factor Section 13.2.3 "Heavy Construction Operations" (dated 1/95), of AP-42, "Compilation of Air Pollutant Emission Factors", 5th Edition, U.S. EPA, Research Triangle Park, NC, 1998.

<sup>3</sup> Use of this factor to estimate PM10 emissions will result in conservatively high estimates; therefore, it is also conservative for PM 2.5.

<sup>4</sup> Control efficiency of 80 percent is based on Appendix G of the BRAC Facilities and Remote Field Training Site EA (WPAFB, 2008a).

<sup>5</sup> TSP (Total Suspended Particulates) is a conservative estimate for PM10 and PM2.5.

<sup>6</sup> 12 towers with 4 ft x 6 ft foundations; assumed 24 ft x 24 ft disturbed area for each.

<sup>7</sup> 30 ft x 50 ft operations building/equipment storage facility; assumed twice the area disturbed to include parking area and other construction disturbance.

<sup>8</sup> Circular gravel path 200 meters (approximately 650 ft) in diameter by 8 ft wide (approximate perimeter 2,060-ft).

<sup>9</sup> Assumed 5 roads/paths bisecting the circle, 8-ft wide each.

The conservative estimate of particulate emissions from construction of the Tomography Range and associated structures are well below the de minimis threshold level of 100 tpy, and therefore, the Proposed Action is assumed to conform to the SIP for PM2.5.

Fugitive dust emissions from base-wide construction activity are covered under the Title V permit as an insignificant unit and are exempt from permit requirements.

#### **4.1.3 Alternative Site Near Huffman Prairie**

The Tomography Range design at the alternative site near the Huffman Prairie would be the same as the Proposed Action. Construction related particulate emissions would be the same. Construction of the antenna tower ring and operations building at this site would not generate emissions of pollutants that would affect conformance with the PM2.5 SIP or impact the maintenance status of the ozone attainment designation.

#### **4.1.4 No Action Alternative**

There would be no construction or disturbance activities; therefore, no new impacts to ambient air quality would occur.

#### **4.1.5 Mitigation and Best Management Practices**

No adverse impacts to air quality are identified; therefore, mitigation measures are not necessary. However, best management practices to minimize fugitive dust would be implemented. The Ohio Administrative Code requires reasonably available control measures to prevent fugitive dust from becoming airborne during construction. Control measures generally include water or chemical dust

suppression. Construction contractors working on WPAFB are required to have fugitive emissions suppression plans written and implemented when construction begins (Erdei, 2012).

## **4.2 Biological Resources**

### **4.2.1 Evaluation Criteria**

Surface disturbance from construction would impact any biological resources that are present. The extent of disturbance relative to adjacent or replacement habitat types and the importance of the resource determines the extent of the impact. The impacts on biological resources are adverse if species or habitats of high concern are negatively affected over relatively large areas, or population size or distribution of a protected species is reduced.

### **4.2.2 Proposed Action**

The Tomography Range design would leave intact most of the old field. The design and location of the antenna towers would not permanently disturb the entire area and most existing vegetation would be maintained (see Figure 2-2).

Wright-Patterson AFB consulted with the USFWS regarding threatened and endangered species and sensitive habitats on or surrounding Tillman Pit. Wright-Patterson AFB determined the clubshell, snuffbox, and rayed bean mussels would not be affected because neither the species nor any habitat exists in the project area.

The wooded area south of Tillman Pit is potentially suitable roosting habitat for Indiana bats. There are two trees in the center of Tillman Pit that may have to be removed before construction begins. Any tree clearing necessary to install the Tomography Range may affect the bat, but tree clearing activities would only occur during September 30 through April 1 to avoid the summer maternity season. Therefore, WPAFB determined the project is not likely to adversely affect the Indiana bat.

The Tillman Pit area is previously disturbed agricultural fields that are regularly mowed and maintained and therefore not optimal habitat for the eastern massasauga rattlesnake. Wright-Patterson determined the project is not likely to adversely affect this candidate species.

The USFWS concurred with the determinations made by WPAFB of no affect or not likely to adversely affect listed and candidate species, thereby concluding the Endangered Species Act Section 7 consultation process. Correspondence between WPAFB and USFWS is included in Appendix A.

Installation of the antennas and storage building would generate intermittent noise during construction, but the long-term operation of the Tomography Range would not be a source of noise. Indiana bats are tolerant to some noise disturbance. The type of construction activity and the expected short duration would not be new sources of noise in the project area.

Guy wires that support antennas may create strike or collision hazards in known areas of raptor or waterbird concentrations or in major diurnal migratory bird routes or stopover sites. The USFWS referenced guidelines (Avian Power Line Interaction Committee) for visual markers on guy wires to minimize collisions with birds.

The wooded area along Lilly Creek is also considered potential habitat for the bald eagle; however, known nest sites are more than one-half mile from the site and would not be impacted.

The Tomography Range would affect approximately 3 acres of mowed field grasses and forbs and displace common wildlife that inhabit or use the area for forage and cover. Similar adjacent habitat would support the displaced species and thus any impacts would be negligible. The typical species that could be impacted are widely distributed; thus, loss of some individuals and habitat would not affect the populations throughout their range.

#### ***4.2.3 Alternative Site Near Huffman Prairie***

There would be minimal ground disturbance for the installation of the antenna tower ring and operations building. Impacts would be similar to the Proposed Action. Similar habitat on adjacent areas would support displaced species and thus any impacts would be negligible. The Tomography Range at this location would not affect listed species because the area does not support habitat for listed species and none have been located nearby.

#### ***4.2.4 No Action Alternative***

There would be no construction or disturbance activities to construct the Tomography Range; therefore, no impacts to biological resources would occur.

#### ***4.2.5 Mitigation or Best Management Practices***

The Tomography Range antennas are receiving and not transmitting antennas and thus have a lower frequency than other communication towers. The risk of electrocution of birds perching on the antennas or guy wires is negligible. Although the Avian Power Line Interaction Committee guidelines primarily address electrocution, AFRL/Ry will incorporate the flagging of guy wires with visual markers to minimize potential bird collisions. Any tree removal will be in accordance with the reasonable and prudent measures described in the Integrated Natural Resources Management Plan to avoid incidental take of the Indiana bat.

### **4.3 Cultural Resources**

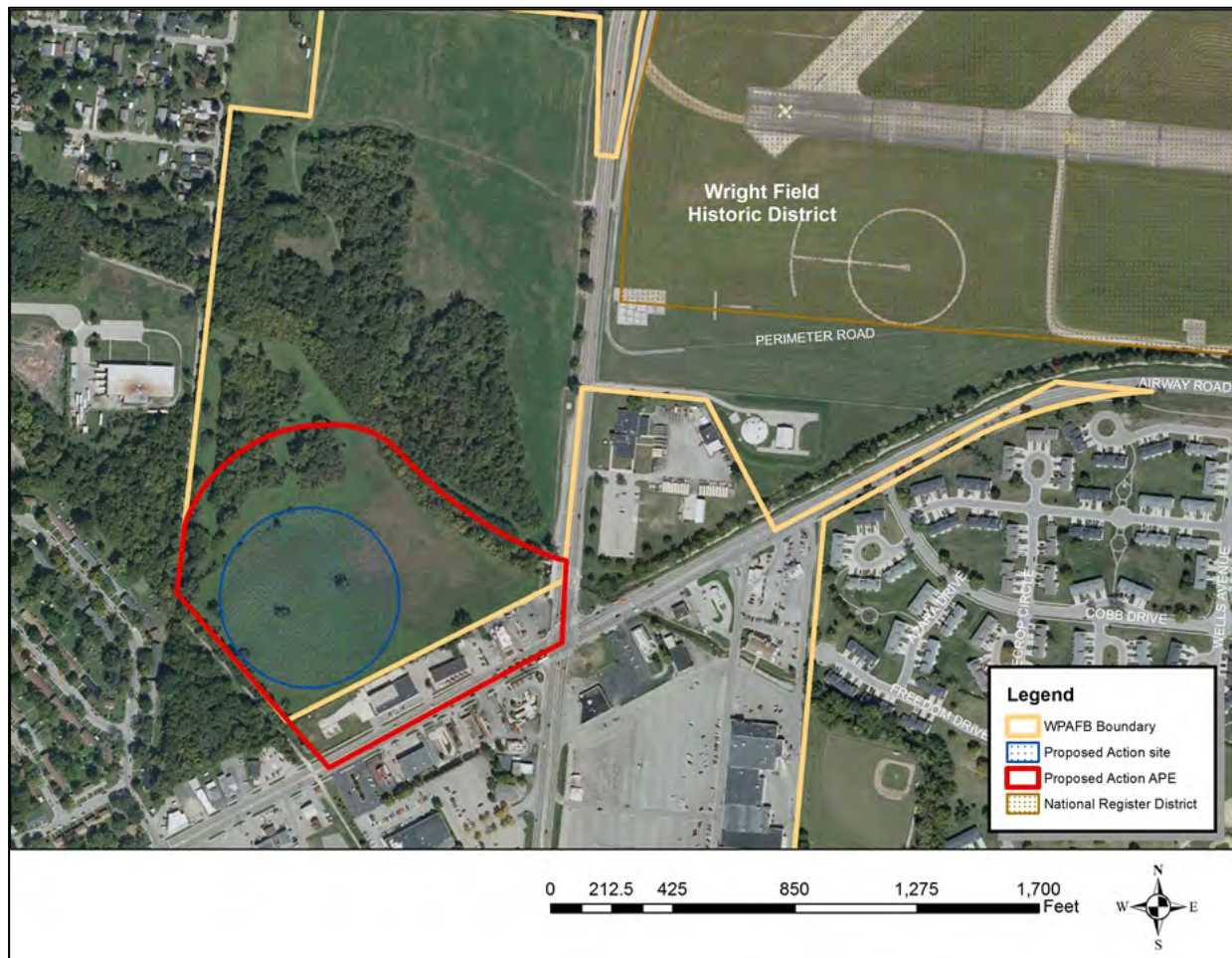
#### ***4.3.1 Evaluation Criteria***

Construction work involving excavation, constructing new structures, or altering existing structures can impact cultural resources. Impacts would be considered adverse if the action includes physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; or introducing visual or audible elements that are out of character with the property or alter its setting.

An Area of Potential Effect (APE) is established to evaluate the potential impact of an undertaking on adjacent cultural resources. The APE is determined by taking into consideration views, access, and approach to and from the project site, activities and functions associated with the undertaking, and proximity of eligible and contributing cultural resources.

### 4.3.2 Proposed Action

The APE boundary around Tillman Pit measures approximately 800 ft x 1200 ft and incorporates an undeveloped portion of WPAFB land and a number of adjacent parcels in the City of Riverside (see Figure 4-1). Views are limited to the north and west due to mature trees and topography. Views to the east are limited by commercial development and mature trees. Commercial developments in the City of Riverside along Airway Road to the immediate southeast are directly within the viewshed of the site and are included within the APE.



**Figure 4-1: Area of Potential Effect Around Tillman Pit**

Wright-Patterson AFB completed a Phase I archaeological investigation of 13 acres of the Tillman Pit site in April 2012. The investigation did not identify any surface or subsurface artifacts or features and concluded that unknown archaeological resources were not present at the site. No further cultural resources work is recommended for this site (Labat, 2012).

The Wright Field Historic District is located approximately 1,000 ft to the northeast of the site, but is not visible from the site. The antenna towers are expected to be blocked from view by the trees surrounding the site to the north and east. Moreover, activities associated with the Proposed Action are limited to the west of Harshman Avenue and would not affect the historic district.

Three privately-owned commercial properties are located within the APE. These buildings have construction dates ranging from the 1950s to 1970s and are typical building types for the area. They are not listed, eligible, nor likely to be eligible for the NRHP or other local historical designations.

The site is not located within any National Register District, nor is any National Register listed or eligible site, building, structure, landscape, or object located within the APE for this undertaking. The Proposed Action does not greatly alter visual or audible characteristics of the area, nor would activities associated with the undertaking affect the integrity of the nearby Wright Field Historic District. Therefore, no adverse impacts would occur to cultural resources at WPAFB or within the City of Riverside from the Proposed Action.

Wright-Patterson AFB consulted with the Ohio SHPO in accordance with Section 106 of the National Historic Preservation Act to concur with WPAFB's determination that implementing the Proposed Action would have no adverse effect on historic properties. The SHPO concurred the project would have no adverse effect on historic properties. Correspondence between WPAFB and SHPO is included in Appendix A

Wright-Patterson AFB consulted with four Native American tribes (see Section 6.0) that have expressed an interest in projects and activities occurring at the Base because of historic and traditional connections to the area. The United Keetoowah Band of Cherokee Indians in Oklahoma responded with no objections to the project (see Appendix A). The other three tribes did not respond within the allotted Section 106 consultation timeframe.

#### ***4.3.3 Alternative Site Near Huffman Prairie***

The APE for the alternative site near Huffman Prairie measures approximately 5,600 ft x 3,800 ft and is large because of the higher visibility across a large piece of land (see Figure 4-2). A half-mile radius defines the northwest border of the APE and includes a small section of Runway 05R/23L. The Huffman Prairie Flying Field National Register Landscape to the southwest is located outside the half-mile of the APE. The southeast border of the APE generally runs along Skeel Avenue as mature trees limit visibility beyond the road. The Brick Quarters District to the east is not directly visible from the site.

This site is not located within any National Register District, nor is any National Register listed or eligible sites, buildings, structures, landscapes, or objects located within the APE for this undertaking. The height of the antenna towers would introduce another structure in the APE that could be visible from the Brick Quarters District and Huffman Prairie Flying Field. The visual intrusion into the viewshed would be adverse.

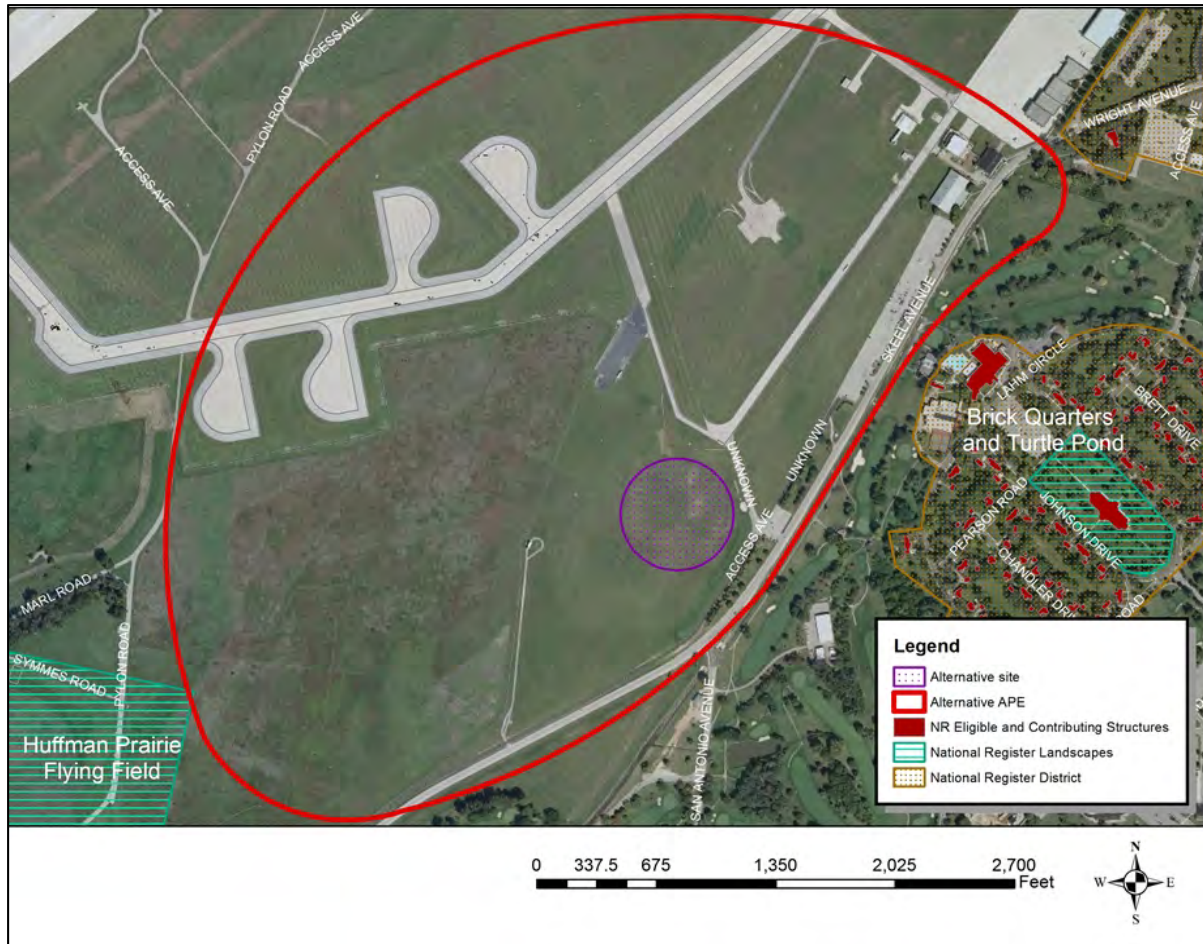
#### ***4.3.4 No Action Alternative***

There would be no further construction or disturbance activities for the facilities and locations described above; therefore, no impacts to cultural resources would occur.

#### ***4.3.5 Mitigation or Best Management Practices***

Although no adverse impacts to archaeological resources are expected, WPAFB is prepared to appropriately handle an inadvertent or unanticipated discovery from ground-disturbing activities. In the event of a discovery of human remains or cultural objects, any work will halt within a 100-ft radius of





**Figure 4-2: Area of Potential Effect Around Huffman Prairie**

the find and the WPAFB Cultural Resources Manager will be notified immediately. Wright-Patterson AFB will comply with the Native American Graves Repatriation and Protection Act and other applicable regulations to identify and treat the remains or cultural objects.

## 4.4 Geology and Soils

### 4.4.1 Evaluation Criteria

Protecting unique geological features, minimizing soil erosion, and siting facilities to avoid potential geologic hazards are considered when evaluating potential impacts of a project on geological resources. Effects on geology and soils would be adverse if the soil composition, structure, or function adversely changes within the environment.

### 4.4.2 Proposed Action

Site preparation and construction of the tower foundations, operations building, parking area, and access roads would have little effect on the topography and soils in the area. Not all 3 acres of the tomography range footprint would be disturbed. The area between antenna towers not needed for the

access road would remain undisturbed (see Figure 2-2). The Tillman Pit area was disturbed by past agricultural practices, so soil disturbance associated with construction would include minor excavation for tower foundations and grading and compacting the site for the operations building and access roads. Although the guy wire anchors could be buried 6 feet deep, the diameter (6 to 8 inches) and method of installation (drill or drive-rod) would not remove much soil. Excavated soils would be used to level and compact the site.

#### **4.4.3 Alternative Site Near Huffman Prairie**

Site preparation, excavation, and construction at the Huffman Prairie site would have similar impacts to soils as at the Tillman Pit site. Not all 3 acres of the tomography range footprint would be disturbed. The area between antenna towers not needed for the access road would remain undisturbed (see Figure 2-2). This area is fill land from flightline construction, so soil disturbance associated with construction would be limited to minor excavation for tower foundations and grading and compacting the site for the operations building and access roads. The guy wire anchors could be buried 6 feet deep but would not disturb much soil because of the small diameter (6 to 8 inches) and method of installation (drill or drive-rod). Excavated soils would be used to level and compact the site.

#### **4.4.4 No Action Alternative**

The No Action Alternative entails no new construction or land disturbance for a tomography mission; therefore, soils would not be impacted.

#### **4.4.5 Mitigation and Best Management Practices**

Generally, impacts can be avoided or minimized when proper construction techniques, erosion control measures, and structural engineering are incorporated into the project design. Erosion control measures will be implemented in accordance with the site-specific SWP3 to minimize erosion, with no significant adverse effect to soil resources.

### **4.5 Hazardous Materials and Waste**

#### **4.5.1 Evaluation Criteria**

Impacts related to hazardous materials and hazardous/nonhazardous waste management would be considered adverse if the action resulted in noncompliance with applicable federal and state regulations, or increased the amounts generated or procured beyond current WPAFB waste management procedures and capacities. Impacts on the Environmental Restoration Program would be considered adverse if the action disturbed or created contaminated sites resulting in negative effects on human health or the environment.

#### **4.5.2 Proposed Action**

Small amounts of potentially hazardous materials (waste oils, lubricants, solvents) would be used with wastes generated during construction but proper use, storage, spill prevention, and disposal of the materials in accordance with Base policies would ensure no impact to workers and the environment. These policies include *Integrated Pollution Prevention, Green Procurement and Solid Waste Management Plan* (WPAFB, 2008b), *Installation HAZMAT Management Program Plan*, (WPAFB, 2008c), and *Spill Prevention Control and Countermeasure Plan* (WPAFB, 2006).

The Tomography Range would be constructed within the 300-ft buffer of Landfill 2. As shown in Figure 4-3, the entrance roadway and a portion of the building and footprint are within the established buffer. To comply with the Ohio Administrative Code, the 88 ABW Environmental Restoration Program staff request authorization from the Ohio EPA for construction activities within the buffer. Correspondence to Ohio EPA and the application for authorization for construction activities within the 300-ft buffer are included in Appendix A.

Suspicious and potentially hazardous materials are not anticipated since the project area is outside the footprint of LF2. As a precaution, an on-site representative would assess the environmental conditions during construction. Buried waste material encountered during construction would be segregated, placed on visqueen (poly-plastic sheeting), and protected from dispersal by covering with more visqueen. Suspicious materials would be analyzed and if determined hazardous, would be disposed of in accordance with applicable rules and regulations. Appropriate air emission and fugitive dust controls would be implemented as applicable.

The operations building at the Tomography Range would generate solid waste from its operations as an administrative office facility. Because the number of personnel (4 to 6 persons) and the amount of activity at the site (2 to 4 times per month) would be low, the amount of solid waste generated would be negligible.

#### **4.5.3 Alternative Site Near Huffman Prairie**

Construction of the Tomography Range near Huffman Prairie would involve minor grading and scraping. There are no hazardous waste sites near this location and therefore no impacts are anticipated. Solid waste generation would be similar to the Proposed Action.

#### **4.5.4 No Action Alternative**

There would be no impacts under this alternative because no construction-related or operational-related hazardous materials or waste would be used or generated, and no construction activities would occur within a EFDZ buffer.

#### **4.5.5 Mitigation and Best Management Practices**

No direct adverse impacts from storage, handling, or disturbance of hazardous materials and waste are identified and therefore mitigation measures are not necessary. Best management practices will be followed, such as notifying appropriate regulatory authorities and taking necessary actions for cleanup and proper disposal should hazardous materials be spilled during construction. The *Spill Prevention Control and Countermeasure Plan* will be updated to include any new location of hazardous materials storage. Implementation of procedures to handle any encounter of buried waste and authorization from Ohio EPA address potential impacts to the integrity of Landfill 2. All personnel on the construction site will have field hazard communications training and be informed of the general site conditions.



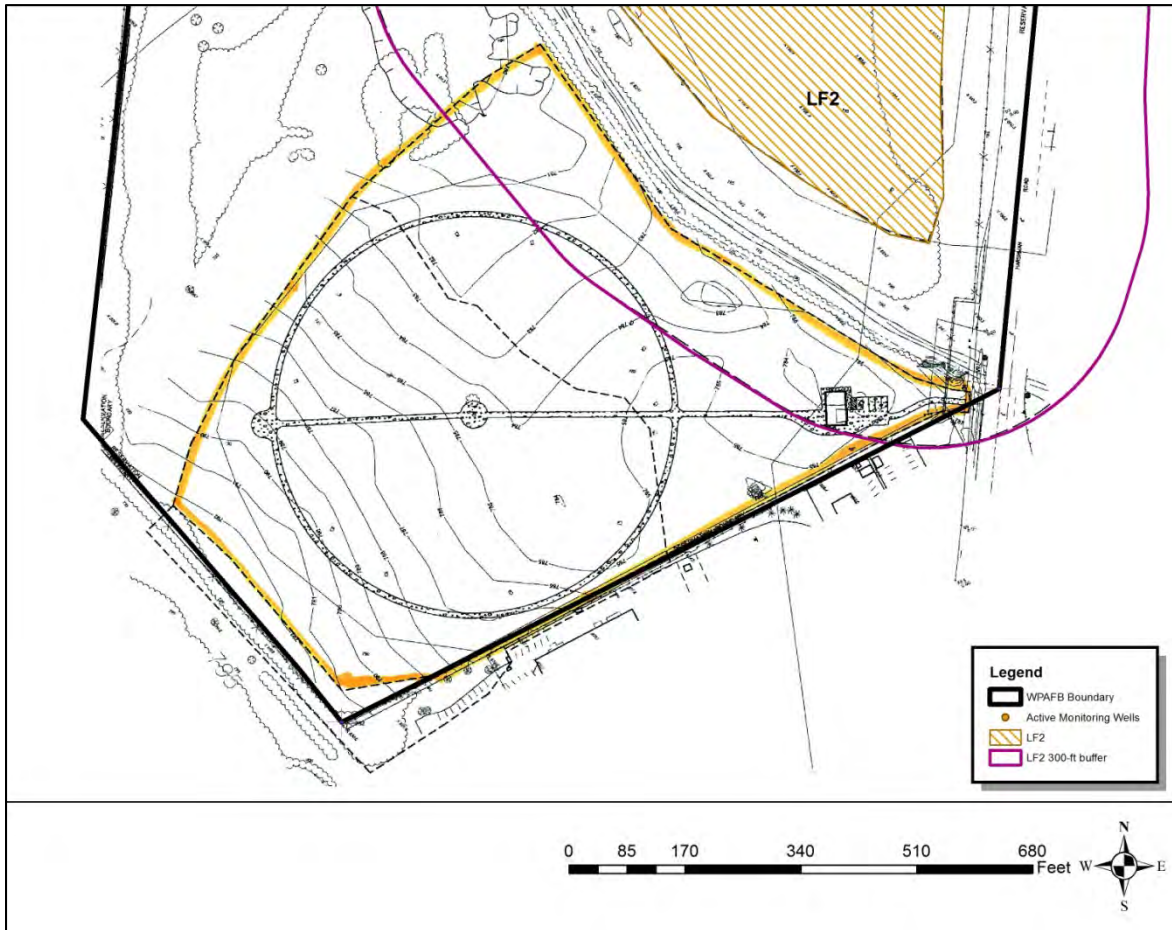


Figure 4-3: Location of Landfill 2 Buffer into Tomography Range Site

## 4.6 Health and Safety

### 4.6.1 Evaluation Criteria

Actions are evaluated for the potential to jeopardize the health and safety of WPAFB personnel and the surrounding public. Impacts might arise from physical changes in the work environment, construction activities, introduction of construction-related risks, and risks created by either direct or indirect workforce and population changes related to proposed activities such as increased traffic.

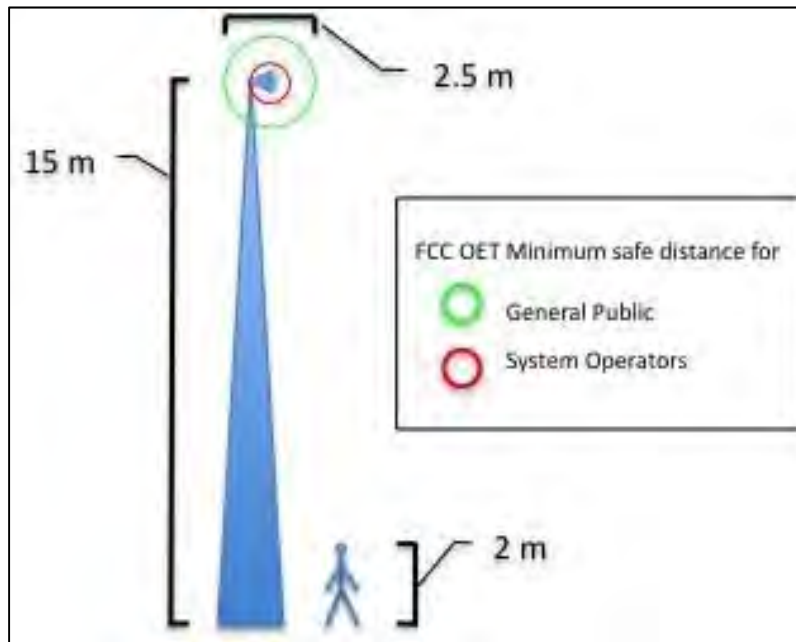
### 4.6.2 Proposed Action

The Tomography Range would be used for experiment preparation, storage and maintenance of antennas, targets, and site related equipment. The facility would contain an operations area, a laboratory, administration area, and a mechanical service/work area. The public would not have access to the operation or construction activities associated with the Tomography Range.

The potential for telecommunication interference and risks to human health and safety are documented in a memo dated July 26, 2011 from AFRL (see Appendix B). The power level proposed to run the

operation (less than 1 watt) would have negligible interference with other radio frequency systems. This amount of power is equivalent to that used by a cell phone.

Impacts to the general public and the system operators for both the Proposed Action configuration and future expansion with increased transmitter power and antenna gain were evaluated. It was determined that even in the worst case scenario, safe exposure levels would be maintained. Figure 4-4 depicts the minimum safe distance standards for system operators and the general public. A person standing directly below the antenna at ground level would be well outside the exclusion zone and receive negligible radio wave exposure.



**Figure 4-4: Minimum Safe Distances**

The Tomography Range construction is not of the design or operational type that would create human safety or health risks. The operations of adjacent facilities would not expose users to any unusual safety or health risks. Health and safety impacts and risks would be greatest during construction.

Heavy equipment would generate noise that could affect the onsite workers during construction. Construction equipment typically emits noise in the 80 to 120 decibel range (Spencer-ER, 2005). The construction contractor would require workers to wear hearing protection in accordance with OSHA regulations. There are no nearby noise sensitive receptors or facilities that would be exposed to additional construction noise.

The entrance roadway and a portion of the operations building footprint are within the 300-ft buffer of Landfill 2. This buffer is subject to use restrictions. To ensure worker safety, approval for digging, construction, or other soil disturbance would be required by WPAFB Environmental Restoration Program staff and Ohio EPA (see Section 4.5.2).

The public has little access to the construction activities associated with the Proposed Action and therefore no impacts to public health and safety are expected.

### **4.6.3 Alternative Site Near Huffman Prairie**

Potential impacts to worker and public health and safety at this location are similar to the Proposed Action. The site is not within a landfill buffer and there are no restrictions on construction. Waivers would be acquired to construct within the hot cargo pad clear zones.

### **4.6.4 No Action Alternative**

There would be no impacts under this alternative because no construction-related or operation-related health and safety risks would occur.

### **4.6.5 Mitigation and Best Management Practices**

No health and safety impacts are identified and therefore mitigation measures are not necessary.

Before construction of the Tomography Range at Tillman Pit could begin, coordination with WPAFB Environmental Restoration Program staff is required with authorization from Ohio EPA (see Appendix A). For either location, best management practices will be followed, such as identifying the construction zone and prohibiting access to unauthorized individuals. Construction contractors will be responsible for complying with applicable health and safety regulations.

## **4.7 Transportation and Infrastructure**

### **4.7.1 Evaluation Criteria**

Impacts on transportation and infrastructure are evaluated for the potential to disrupt or improve existing levels of service and additional needs for utilities and transportation patterns and circulation. Impacts might arise from physical changes to circulation, construction activities, introducing construction-related traffic on local roads, changes in daily or peak-hour traffic volumes, and energy needs created by either direct or indirect workforce and population changes related to Base activities.

### **4.7.2 Proposed Action**

There are no enhancements planned to Harshman Road. The number of personnel assigned would not increase by operating the Tomography Range at WPAFB since they have already relocated from the Rome AFB Tomography Range. The monthly frequency to Tillman Pit is expected to be minimal (approximately 2 to 4 visits per month) and the number of people anticipated to be at the site at any one time is 4 to 6. There would be no impacts to transportation patterns and circulation.

The proposed entrance to the Tomography Range is at the existing entrance, south of Lilly Creek. Since this entrance is within the extended shoulder of Harshman Road, the ingress and egress would be a right turn only. This means personnel would only be able to enter and exit the facility from the southbound direction on Harshman Road. The entrance area would be a new concrete drive that connects to a gravel road inside the fenced area. A new security gate would be installed for authorized personnel only.

Construction activities would result in a slight increase to traffic volume in the project area due to on-road use by construction equipment, construction workforce vehicles, and vehicles delivering construction materials. Temporary traffic controls may be necessary for safe ingress and egress of trucks

and tractor-trailers delivering the antenna towers to the site. The construction of the Tomography Range would have negligible impacts to traffic at and around WPAFB.

The building and site would not be served with sanitary sewer, water, or natural gas. Power would be needed for the operations building and for each of the antenna towers and would be connected from adjacent overhead power lines.

#### ***4.7.3 Alternative Site Near Huffman Prairie***

Traffic impacts would be less than those described for the Proposed Action. Skeel Avenue has much less traffic than Harshman Road, which would make the entrance/exit to the range easier. A secured entrance to the Tomography Range would have to be provided from Skeel Avenue.

#### ***4.7.4 No Action Alternative***

There would be no impacts under this alternative because there would be no construction-related or operation-related change to traffic patterns and infrastructure on the Base.

#### ***4.7.5 Mitigation and Best Management Practices***

No adverse impacts to transportation and infrastructure are anticipated and therefore mitigation measures would not be necessary. Traffic signs for vehicles exiting the property may be required since only right-turns are feasible.

### **4.8 Visual Resources**

#### ***4.8.1 Evaluation Criteria***

Visual character is a point of reference to assess whether a given project would appear compatible with the established features of the setting or would contrast noticeably and unfavorably with them. Visual resources have a social setting, which includes public expectations, values, goals, awareness, and concern regarding visual quality. This social setting is addressed as “visual sensitivity,” the relative degree of public interest in visual resources and concern over adverse changes in the quality of that resource. As applied to visual impact analyses, sensitivity refers to public attitudes about specific views, or interrelated views, and is key to assessing how important a visual impact may be, and whether or not a proposed project presents an impact.

#### ***4.8.2 Proposed Action***

The Tomography Range would only be visible from the Harshman Road entrance to the site. The area would maintain a prairie feel since most of the ground cover would continue to exist (see Figure 4-5). The chain-link fence at the entrance to the property would remain and currently creates a visual barrier from the roadway. The 50-ft towers may be visible behind the commercial buildings from Airway Road, but would not be visually intrusive. Pedestrians cannot currently see Tillman Pit from the Creekside Trail, and therefore, the Tomography Range would not be visible to trail users. The public concern over the scenic quality of the Tillman Pit area would be low as the visual sensitivity to the area is compatible with military activities.





**Figure 4-5: Typical Antenna Tower**

#### ***4.8.3 Alternative Site Near Huffman Prairie***

Since the area near Huffman Prairie is currently vacant and the site does not have any trees, the construction of the towers would be noticeable to both drivers along Skeel Avenue and to pedestrians and bikers on the WPAFB Trail. The views from the Huffman Prairie National Historic Landmark, the Brick Quarters Historic District, and the driving range are also of concern. Since Huffman Prairie is a national landmark and adjacent to a historic district, this alternative site would be considered undesirable and require consultation with agencies pertaining to viewshed impacts. The highly intense visual impact of the towers may be perceived as a lessening of visual quality from surrounding locations.

#### ***4.8.4 No Action Alternative***

There would be no impacts under this alternative because there would be no construction-related or operation-related change to the visual character of the Base.

#### **4.8.5 Mitigation and Best Management Practices**

No adverse impacts to visual resources are identified at Tillman Pit and therefore mitigation measures are not necessary. At the area near Huffman Prairie, the Tomography Range may block a view formerly available from Huffman Prairie National Historic Landmark or encroach into the viewshed of the adjacent Brick Quarters Historic District. Measures to screen the towers from these sites could be required by as mitigation of viewshed impacts.

### **4.9 Water Resources**

#### **4.9.1 Evaluation Criteria**

Evaluation criteria for impacts on water resources are based on water quality and use, existence of floodplains, and compliance with local, state, and federal regulations. An impact would be adverse if it affects water quality adversely, threatens or damages unique hydrologic characteristics, limits water supply, or violates established laws or regulations adopted to protect water resources.

#### **4.9.2 Proposed Action**

Construction of the Tomography Range would involve the disturbance of more than one acre. Therefore, contractors would be required to file a Notice of Intent application with the Ohio EPA for the construction storm water general permit and prepare a SWP3 outlining measures to be used during construction to minimize runoff from the site. Adherence to these requirements would result in no adverse impact to surface water quality.

Section 438 of the Energy Independence and Security Act of 2007 (EISA) requires federal agencies developing or redeveloping facilities with footprints exceeding 5,000 square feet must do so in a manner that maintains or restores the predevelopment site hydrology to the maximum extent technically feasible. The “maximum extent technically feasible” criterion requires full employment of accepted and reasonable storm water retention and reuse technologies (bio-retention areas, permeable pavements, cisterns/recycling, and green roofs), subject to site and applicable regulatory constraints such as site size, soil types, vegetation, demand for recycled water, existing structural limitations, state or local prohibitions on water collection.

Stormwater runoff volumes generated from either Option 1 or Option 2 of Section 438 Technical Guidance, dated December 2009, would have to be reduced by infiltration, evapotranspiration, and/or harvesting and use. Due to local climatic conditions, evapotranspiration is not a viable option for this site. Harvesting and reuse is also not an option, leaving infiltration as the only possible option.

The project site is located on hydrological soil type “D” which is typically not suitable for infiltration. Soils in this group have a high water table and very slow rate of water transmission. For this specific site, the water table is approximately 6 inches deep. The combination of shallow seasonal high water table and low infiltration rates renders this site unsuitable for infiltration based on storm water management practices. For these reasons, the project would not be able to implement the provisions of Section 438 of EISA.

The site is within the 100-year floodplain and located on property owned by the Federal government. The Tomography Range operations building would be located in the 100-year floodplain, but outside the regulatory floodway. The first floor of the building would be located 1.0 foot above the base 100-year

flood elevation. Fill is permitted in the floodplain without any requirement for compensation for storage volume loss as long as it is placed outside the floodway. Three of the towers (with equipment vaults) and access roads would be built within the regulatory floodway. The pad for the towers and equipment vaults would be at grade along with completed elevation of the access roads. The only obstruction to flood flow would be the small triangular tower and equipment vault, both of which represent a very small area loss with respect to the total cross sectional area. Compliance with applicable regulations (Floodplain Management EO 11988) would be met with this design (see Appendix A).

Wright-Patterson AFB is managed as an integral part of the installation's source water protection area under a Memorandum of Agreement with the City of Dayton. As part of that agreement, the 88 ABW environmental staff conducts a biennial inventory of regulated substances that are stored within the source water protection area. Special efforts are implemented to prevent the release of the pollutants to the ground. Facilities included as part of the Proposed Action or alternative are not included within the source water protection area.

#### ***4.9.3 Alternative Site Near Huffman Prairie***

Construction of the Tomography Range would have similar disturbance to the Proposed Action. Contractors would be required to file a Notice of Intent application with the Ohio EPA for the construction storm water general permit and prepare a SWP3 outlining measures to be used during construction to minimize runoff from the site.

Storm Water best management practices to comply with Section 438 of the EISA would be required. To implement Section 438 of EISA, low impact development techniques would be incorporated into the design of the Tomography Range near Huffman Prairie.

The area near Huffman Prairie is not within the 100-year floodplain of any nearby tributaries, and there would be no impacts to Hebble Creek; therefore, no impacts would occur to these resources.

#### ***4.9.4 No Action Alternative***

The No Action Alternative entails no new construction or land disturbance activities for Tomography Range; therefore, surface water and groundwater quality and quantity would not be impacted.

#### ***4.9.5 Mitigation and Best Management Practices***

No adverse impacts to water resources are identified and therefore mitigation measures are not necessary. Wright-Patterson AFB has both surface water and groundwater protection programs in place to ensure projects do not impact water quality (WPAFB, 2007c; WPAFB, 2011c). Best management practices will continue to be followed, such as implementing soil erosion and siltation control measures described in the SWP3. Some of these may include installing silt fencing and straw bales around each construction site and nearby storm sewer inlets.

### ***4.10 Cumulative Impacts***

This section describes the impacts to the environment that may potentially occur because of the additive (cumulative) effects of constructing the Tomography Range at the Tillman Pit or Huffman Prairie site with other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over time.

Past and present actions near the proposed Tillman Pit or Huffman Prairie sites included in the cumulative impact analysis are the construction and operation of the BRAC facilities, infrastructure upgrades, Air Force Institute of Technology Campus Master Plan, development of the Hilltop Community Services District, and the consolidation of the Civil Engineering operations. The foreseeable future actions include the continued expansion of the Information Technology Complex, demolition of buildings in conjunction with the CE Consolidation project, RV Storage Lot relocation to Tillman Pit, Air Force Research Laboratory parking lot expansion, relocating the perimeter fence, and reconfiguring entry gates.

The Tomography Range project would not affect biological resources, cultural resources, soils, and transportation and infrastructure beyond the boundaries of the areas proposed for the range and the immediately adjacent area; therefore, no cumulative impacts to these resources would occur.

Air quality in the area is generally good, as demonstrated by the recent proposal to reclassify the area as in attainment for PM<sub>2.5</sub>. Construction emissions are short-term and with adequate dust control measures during and after construction, cumulative increases in PM<sub>2.5</sub> emissions should not exceed NAAQS or affect the attainment designation in the area.

The Tomography Range would produce little to no hazardous waste during operation. Any potentially hazardous wastes (waste oils, lubricants, solvents) generated during construction would be managed and handled by WPAFB. Wright-Patterson AFB has adequate systems and capacity to manage the small amounts of hazardous waste for this project and for other proposed projects; therefore, no adverse cumulative impacts to hazardous waste management from either alternative site would occur.

Cumulative impacts from additional future construction within the 300-ft buffer of Landfill 2 for an RV Storage Lot would not be significant with implementation of procedures approved by the Ohio EPA to protect public health and safety and the integrity of the landfill.

Introduction of a new source of radio frequency would not impact health and safety and thus would not have any cumulative impacts. Additional activity within the hot cargo pad clear zones near the Huffman Prairie site could have a cumulative impact to health and safety but impacts would be addressed through the required waivers.

The utilities infrastructure needed to support the Tomography Range would be adequate. Electricity is needed at both alternative sites but no adverse cumulative impacts to infrastructure would occur because the source is nearby.

Visual impacts of the Tomography Range at the Tillman Pit would be minimal. The character of the lands within the public view in combination with other proposed projects would have no adverse cumulative impacts to visual resources. No other visual encroachment into the viewshed near the Huffman Prairie site is projected and no cumulative impacts would result.

Compliance with a SWP3 and EISA requirements to the extent practicable for the Tomography Range and other projects would ensure no cumulative impacts to water quality.

## **4.11 Irreversible or Irretrievable Commitments of Resources**

An irreversible commitment of resources can be defined as the loss of future options. Irreversible effects result primarily from consumption or destruction of a specific resource that cannot be replaced within a



reasonable timeframe (minerals or soils). Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored because of the action (extinction of a threatened or endangered species or the destruction of a cultural site).

Labor, energy, materials, and capital would be committed for construction of the Tomography Range Project. These resources would not be recovered. Construction would make permanent use of the antenna and operations building materials; however, rare resources would not be consumed in the process. The construction materials, except to the extent they can be recycled, would be irretrievably committed.

The Tomography Range Project would occupy approximately 10 acres of new land for some time into the future until the operations are terminated. When the operations are no longer needed, the land may be restored to its existing conditions.

Other committed resources would include water, natural gas, fossil fuels, and electricity used for the construction of the operations building and for their continued operation.

#### **4.12 Relationship between Short-term Uses of the Environment and the Maintenance and Enhancement of Long-term Productivity**

Short-term use of a labor force would result in long-term productivity of the site for consolidated research. The construction of the Tomography Range would support the Sensors directorate to consolidate resources at WPAFB. Short-term effects from construction activities with negligible adverse impacts, such as temporary and minor increases in traffic and noise, would provide for a long-term situation with more productive and effective research.

## **LIST OF PREPARERS**

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## 5.0 LIST OF PREPARERS

This EA was prepared by the 88 ABW Asset Management Division, Planning and Real Property Section with contractual assistance from Labat Environmental, Inc. The following individuals were primarily responsible for preparing and reviewing the EA, or for providing senior level guidance and quality control.

Name	Role	Qualification
Cory Edwards	Historic Preservation Specialist Cultural Resources, GIS	M. Arch., Architecture B.S., Architecture Years of Experience: 4
Tamar Krantz	Ecologist/Biologist Air Quality, Regulatory Compliance	M.P.H., Environmental Health Sciences (Air Quality) B.A., Biology and Environmental Studies Years of Experience: 20
Kelly Maiorana	Senior Natural Resource Specialist Alternatives, Transportation, Soils	B.S., Environmental Science Years of Experience: 12
Christine Modovsky	Quality Assurance Coordinator Senior Technical Reviewer	M.S., Environmental Science B.S., Environmental Science Years of Experience: 23
Dan Moyes	Project Manager Purpose and Need, Senior Technical Reviewer	B.S., Information Systems A.A.S. Environmental Technology Years of Experience: 38
Mary Peters	Senior NEPA Specialist Purpose and Need, Alternatives, Biology, Water Resources	J.D., Law B.S., Fisheries and Wildlife Biology Years of Experience: 27
Thomas Walker	Senior Environmental Engineer Hazardous Waste	Ph.D., Environmental Engineering M.S., Civil Engineering B.S., Civil Engineering Years of Experience: 39

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**PERSONS CONTACTED**

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## 6.0 PERSONS CONTACTED

Several persons associated with WPAFB and federal, state, and local agencies contributed information and data for the preparation of this EA. The following persons were contacted or consulted.

Name	Role	Air Force Organization
Jo Lynn Anderson	Chief, Planning and Real Property Section	88 ABW/CEAOR
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Darryn Warner	Natural Resources Program Manager	88 ABW/CEANQ
Paul Woodruff	Cultural Resources Program Manager	88 ABW/CEANQ

Name	Role	Agency
Johnathan Buffalo	Historical Preservation Director	Sac and Fox Tribe of the Mississippi in Iowa
Tracy Buchanan	Division of Material and Waste Management	Ohio Environmental Protection Agency
Summer Sky Cohen	Tribal Historic Preservation Officer	Keweenaw Bay Indian Community
Mark Epstein	Resource Protection and Review	Ohio Historic Preservation Office
William Johnson	Historic Preservation	Saginaw Chippewa Indian Tribe
Melanie Cota	Ecological Services, Section 7 Consultation	U.S. Fish and Wildlife Service
Kurt Rinehart	Chief Engineer, Floodplain Protection	Miami Conservancy District
Lisa Stopp	Historic Preservation	United Keetoowah Band Cherokee Indians
Debbie Woischke	Species Biodiversity Database	Ohio Department of Natural Resources

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## REFERENCES

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## 7.0 REFERENCES

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## **APPENDIX A**

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### **INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTAL PLANNING**

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# **OHIO DEPARTMENT OF NATURAL RESOURCES**



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**LABAT**  
Environmental

1406 Fort Crook Road South, Suite 101  
Bellevue, NE 68005-2980  
Phone (402) 291-2362  
Fax (402) 291-2836

**Ohio Department of Natural Resources**

August 9, 2011

Division of Wildlife  
Ohio Biodiversity Database Program  
4625 Morse Road, Building G-3  
Columbus, OH 43229-3096

**Subject:** Data Request, Tomography Range and Equipment Storage Facility, Wright-Patterson Air Force Base

Dear Database Administrator:

The U.S. Air Force is proposing to install antenna towers and a storage facility to support the relocation of the Sensors Directorate Tomography mission to Wright-Patterson Air Force Base (AFB). On behalf of the 88th Air Base Wing Environmental Management Division, we are requesting information on Ohio's rare plants and animals, high quality plant communities, and other natural features that may be within a one-mile radius of the proposed project location. The Database Request Form is attached. The information will be used in the preparation of an Environmental Assessment (EA) in compliance with the National Environmental Policy Act.

The tomography range is proposed to be located on approximately 13 acres of open area in the southwest corner of Area B of Wright-Patterson AFB. The proposed range includes installation of 12 antenna towers, each 50 feet tall, on concrete foundations placed in a circular pattern approximately 650 feet in diameter. An access road, parking lot, and equipment storage building (1,500 square feet) are proposed for operation and maintenance of the range. The proposed location is shown on the attached topographic map.

The Draft EA is scheduled for release by mid-September and thus a prompt response is greatly appreciated. If there are any questions or additional information is needed, please contact Kelly Maiorana by telephone at 303-483-3502 or by e-mail at [kelly.maiorana@labatenv.com](mailto:kelly.maiorana@labatenv.com). Thank you for your assistance.

**Labat Environmental, Inc.**

Dan G. Moyes, CECM  
Vice President

**Attachments**

Data Request Form  
Location Map

cc: Karen Beason, via email: [Karen.Beason@wpafb.af.mil](mailto:Karen.Beason@wpafb.af.mil)  
Ms. Jo Lynn Anderson: via email: [JoLynn.Anderson@wpafb.af.mil](mailto:JoLynn.Anderson@wpafb.af.mil)  
Ms. Pat Long, via email: [Pat.Long@wpafb.af.mil](mailto:Pat.Long@wpafb.af.mil) (letter only)

LABAT Environmental Inc.

A Service-Disabled Veteran Owned Small Business



## DATA REQUEST FORM

OHIO DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF WILDLIFE  
OHIO BIODIVERSITY DATABASE PROGRAM  
2045 MORSE RD., BLDG. G-3  
COLUMBUS, OHIO 43229-6693  
PHONE: 614-265-6452; FAX: 614-267-3096

### INSTRUCTIONS:

Please complete both sides of this form, sign and return it to the address or fax number given above along with: **(1)** a brief letter describing your project, and **(2)** a map detailing the boundaries of your project site. A copy of the pertinent portion of a USGS 7.5 minute topographic map is preferred but other maps are acceptable. Our turnaround time is two weeks, although we can often respond more quickly. If you fax in your request you do not need to mail the original unless otherwise requested.

### FEES:

As of June 2010, we have temporarily suspended charging a fee until a review of the data request process has been completed.

**WHAT WE PROVIDE:** The Biodiversity Database is the most comprehensive source of information on the location of Ohio's rare species and significant natural features. Records for the following will be provided: plants and animals (state and federal listed species), high quality plant communities, geologic features, breeding animal concentrations and unprotected significant natural areas. We also provide locations for managed areas including federal, state, county, local and non-profit sites, as well as state and national scenic rivers. A minimum one mile radius around the project site will automatically be searched. Because the data is sensitive information, it is our policy to provide only the data needed to complete your project.

\*\*\*\*\*

Date: 8/8/11 Company name: Labat Environmental, Inc.

Name of person response letter should be addressed to: Mr. ☒ Ms. ☐

Dan moyes

Address: 8626 Tesoro, Suite 510

City/State/Zip: San Antonio, TX 78217

Phone: 210-654-3546 Fax: 210-654-3802

E-mail address: dan.moyes@labatenv.com

Project Name: Tomography Range EA

Project Number: 9324-007

Project Site Address: NW intersection of Airway Road & Woodman Drive, Wright-Patterson AFB

Project County: Montgomery

Project City/Township: Riverside

Project site is located on the following USGS 7.5 minute topographic quad(s): \_\_\_\_\_

Dayton North 1999 1:24,000

Section 23, T7.0N R2.0E

Description of work to be performed at the project site: construction of concrete foundations and installation of 12 50-foot towers and guy wires; support building and access road.

How do you want your data reported? (Both formats provide exactly the same data. The only difference is in the format of our response. The manual search is most appropriate for small scale projects or for those who do not have GIS capabilities. Please choose only one option.)

Printed list and map (manual search) X OR GIS shapefile (computer search) \_\_\_\_\_

Additional information you require: \_\_\_\_\_

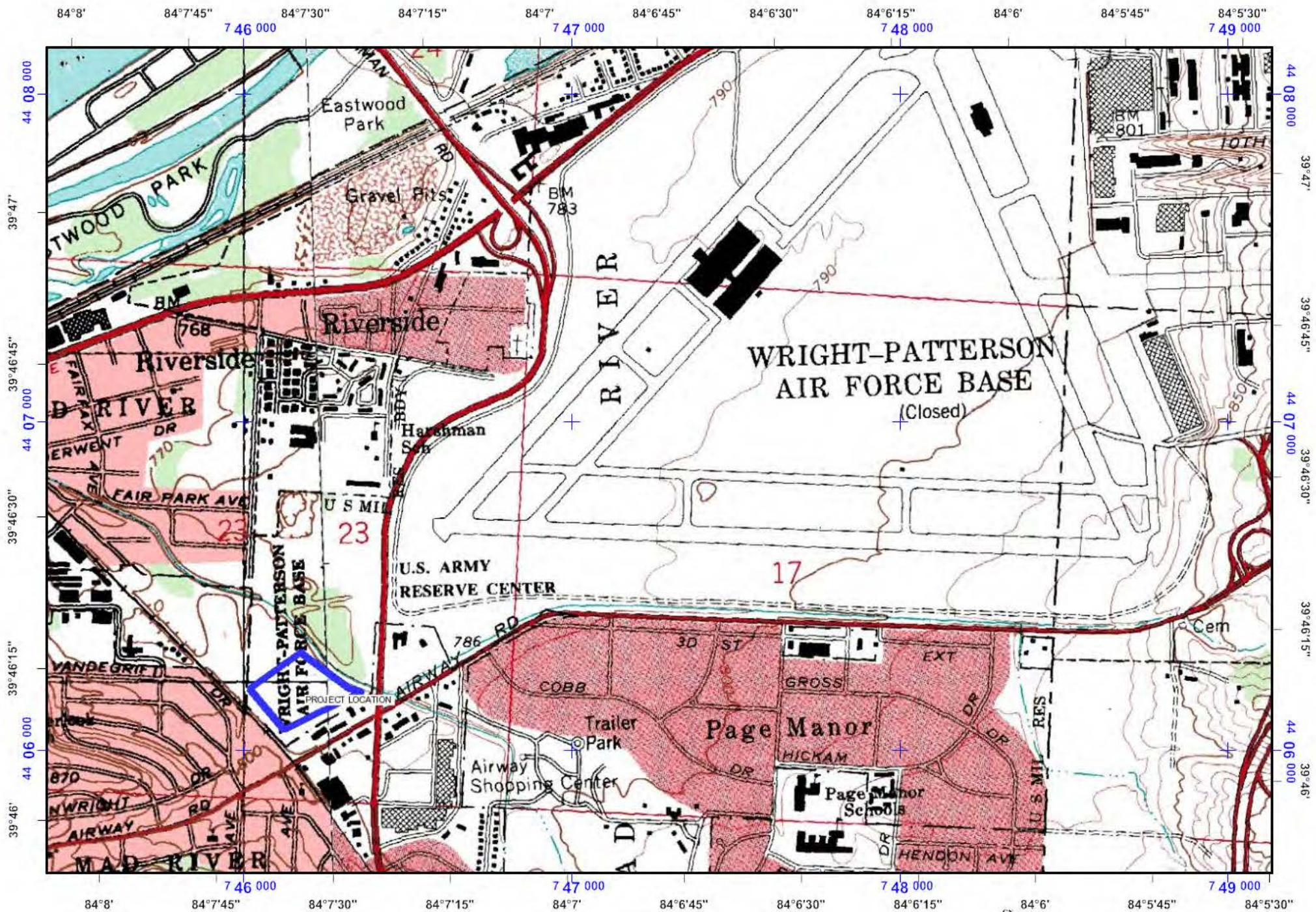
How will the information be used? preparation of Environmental Assessment in compliance with National Environmental Policy Act for relocating tomography mission to Wright-Patterson AFB

I certify that data supplied by the Ohio Biodiversity Database Program will not be published without crediting the ODNR Division of Wildlife as the source of the material. In addition, I certify that electronic datasets will not be distributed to others without the consent of the Division of Wildlife, Ohio Biodiversity Program.

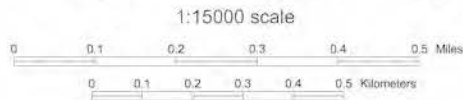
Signature \_\_\_\_\_

Date: \_\_\_\_\_





Universal Transverse Mercator (UTM) Projection Zone 16  
 North American Datum of 1983  
 1000 meter UTM / USNG / MGRS  
 Grid Zone Designation: 16S  
 100,000-m Squares: GK



Magnetic declination of 3W at center of map  
 on March 17, 2011.





# Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

DAVID MUSTINE, DIRECTOR

## Ohio Division of Wildlife

*David B. Lane, Chief*  
2045 Morse Rd., Bldg. G  
Columbus, OH 43229-6693  
Phone: (614) 265-6300

August 11, 2011

Dan Moyes  
Labat Environmental, Inc.  
8626 Tesoro, Suite 810  
San Antonio, TX 78217

Dear Mr. Moyes:

After reviewing our Biodiversity Database, I find the Division of Wildlife has no records of rare or endangered species in the Tomography Range project area, including a one mile radius, at Wright-Patterson Air Force Base on Airway Rd. in section 23 of Mad River Township, Montgomery County, and on the Dayton North Quad (9324-007). We are unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forests, national wildlife refuges, parks or forests or other protected natural areas within a one mile radius of the project area.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Although we inventory all types of plant communities, we only maintain records on the highest quality areas.

Please contact me at 614-265-6818 if I can be of further assistance.

Sincerely,

A handwritten signature in blue ink, appearing to read "Debbie Woischke".

Debbie Woischke, Ecological Analyst  
Ohio Biodiversity Database Program

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# **OHIO HISTORIC PRESERVATION OFFICE**

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## DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 88TH AIR BASE WING (AFMC)  
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

09 September 2011

88 ABW/CEANQ  
1450 Littrell Road  
Wright-Patterson AFB OH 45433-5209

Mr. Mark Epstein  
Department Head, Resource Protection & Review  
Ohio Historic Preservation Office  
1982 Velma Ave  
Columbus OH 43211-2497

Dear Mr. Epstein

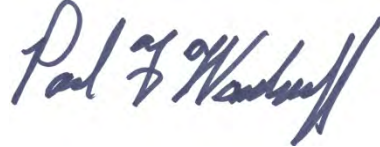
Wright-Patterson Air Force Base (WPAFB) is preparing an Environmental Assessment (EA) to assess the potential environmental impacts of installing a Tomography Range and Equipment Storage Facility in Area B of WPAFB. The range would support the Sensor Directorate's tomography mission. The proposed location for the range and storage facility is a vacant area (approximately 13 acres) in the southwest corner of Area B, as shown on the attached map.

The project includes installing twelve (12) fifty-foot towers with guy wires equally spaced in a circular pattern approximately 200 meters (650 feet) in diameter. Tower foundations, electric power supply, fiber optic lines, security lighting, lighting protection, compacted gravel drives, parking pad, and a 30' x 50' concrete block equipment storage facility would be constructed to operate and maintain the range. Minimal excavation would be required to construct the concrete tower foundations and poles. The twelve (12) tower foundations would require the excavation of a 4' x 6' area no more than 2' deep. The poles will be buried 77" inches in order to stabilize the antenna.

Pursuant to the requirements of Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's implementing regulations (36 CFR Parts 800-899), WPAFB respectfully requests your concurrence that an archaeological survey is not required for this site. Based on historic land uses which consisted of agriculture land and the clear zone for the active runway, and previous surveys conducted in the surrounding area, this project site has a low probability for archaeological finds. Please note the capped land fill hatched in yellow that is located to the north of the stream which cuts diagonally through the site. As with all projects, the site will be closely monitored during construction and any subsurface archaeological discovery will result in an immediate halt in construction activity.

Please review the information we have provided and let us know whether you concur with us regarding this site. A follow on letter regarding the undertaking itself will be forthcoming in the near future. Should you have questions or need additional details, I can be reached at 937-257-1374, or via email at [paul.woodruff@wpafb.af.mil](mailto:paul.woodruff@wpafb.af.mil).

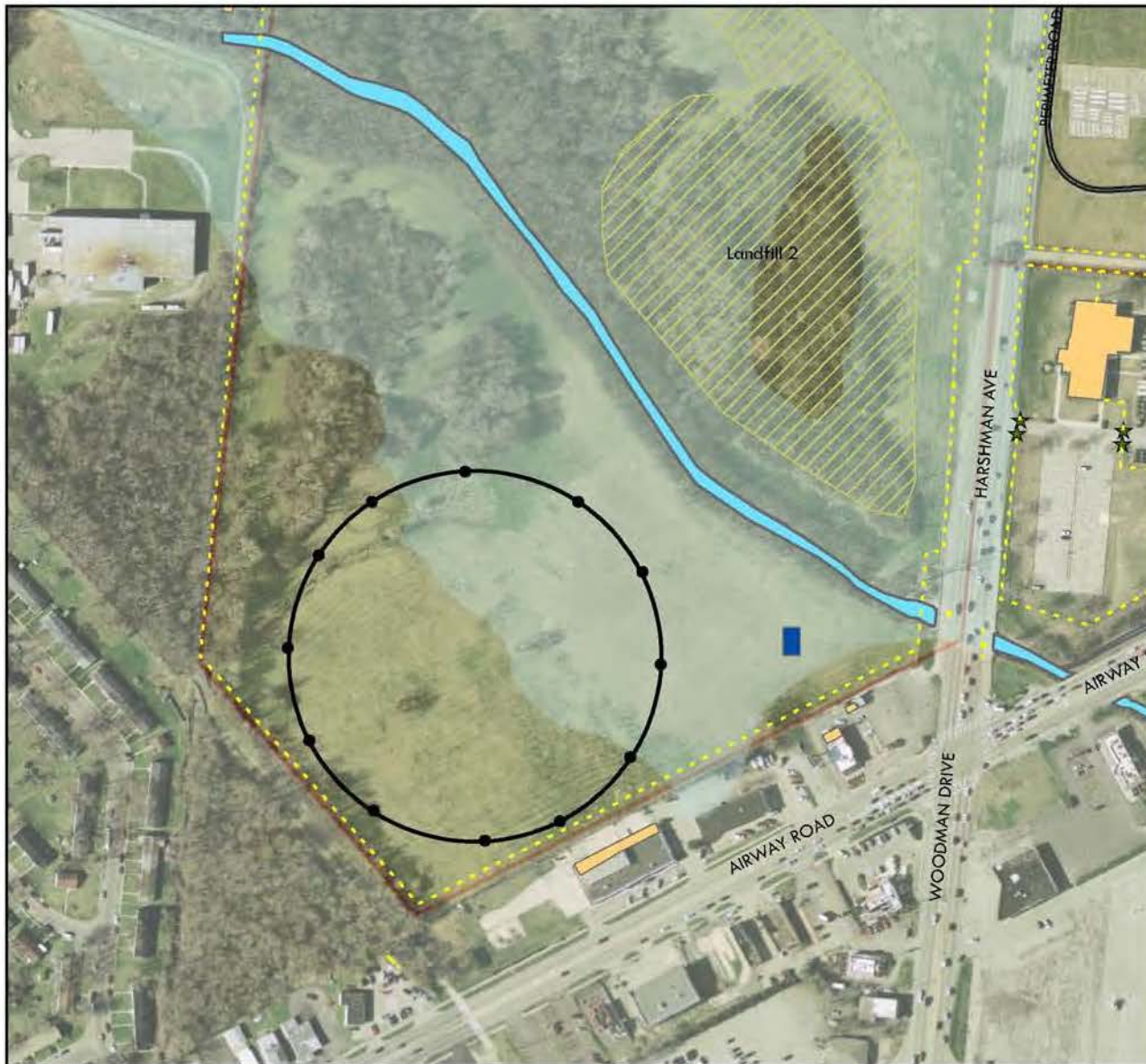
Sincerely

A handwritten signature in dark ink, appearing to read "Paul F. Woodruff". The signature is fluid and cursive, with the first name "Paul" and last name "Woodruff" being clearly legible, and the middle initial "F." written in a smaller, more compact script.

Paul Woodruff  
Cultural Resources Manager  
Environmental Quality Section  
Environmental Branch

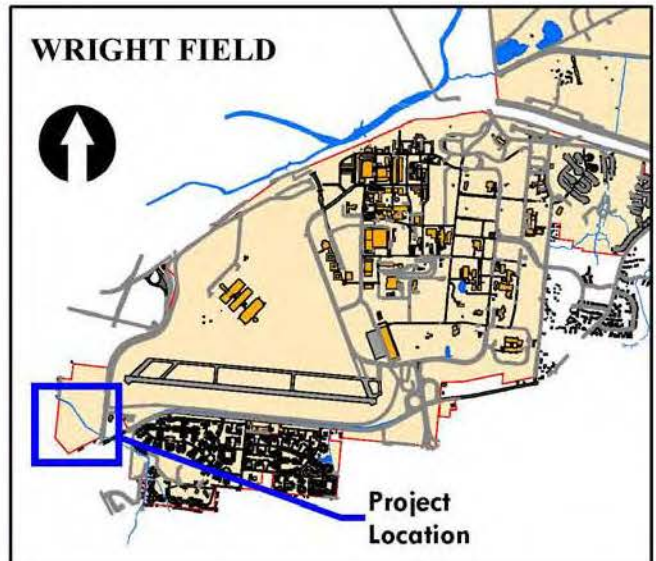
Attachments:

1. Project Mapping



Proposed Site Development: Tomography Range & Equipment Storage Facility

SEP 2010



Proposed Location for Tomography Range and Equipment Storage Facility  
Area B, Wright-Patterson AFB





October 21, 2011

Paul F. Woodruff  
Environmental Quality Section  
88 ABW/CEANQ, 1450 Littrell Road  
Wright-Patterson AFB, OH 45433-5209

Re: Tomography Range and Equipment Storage Facility, Area B  
WPAFB, Montgomery and Greene Counties, Ohio

Dear Mr. Woodruff,

This is in response to correspondence from your office dated September 9, 2011 regarding the above referenced project. The comments of the Ohio Historic Preservation Office (OHPO) are submitted in accordance with provisions of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 [36 CFR 800]).

The project involves a small amount of ground disturbance in a 13 acre area. There is evidence of severe disturbance in a portion of this 13 acre area. A check of our records, see attached, shows that this area has not been included in archaeological surveys of WPAFB. Per our discussion, because a portion of the project area has not been included in archaeological surveys, it seems prudent to conduct a Phase I archaeological survey of this area.

In making this recommendation we are aware that WPAFB has conducted extensive archaeological surveys to identify significant archaeological sites. It is our intention to be selective in recommending any additional archaeological surveys. Given the location towards the edge of the Mad River valley and the likely proximity to water (before historic-era modifications), it is my opinion that there is a reasonable opportunity to identify significant archaeological deposits in this area.

Any questions concerning this matter should be addressed to David Snyder at (614) 298-2000, between the hours of 8 am. to 5 pm. Thank you for your cooperation.

Sincerely,

David Snyder, Ph.D., RPA, Archaeology Reviews Manager  
Resource Protection and Review

DMS/ds (OHPO Serial Number 1040551, Project Number 2011-GRE-17816)

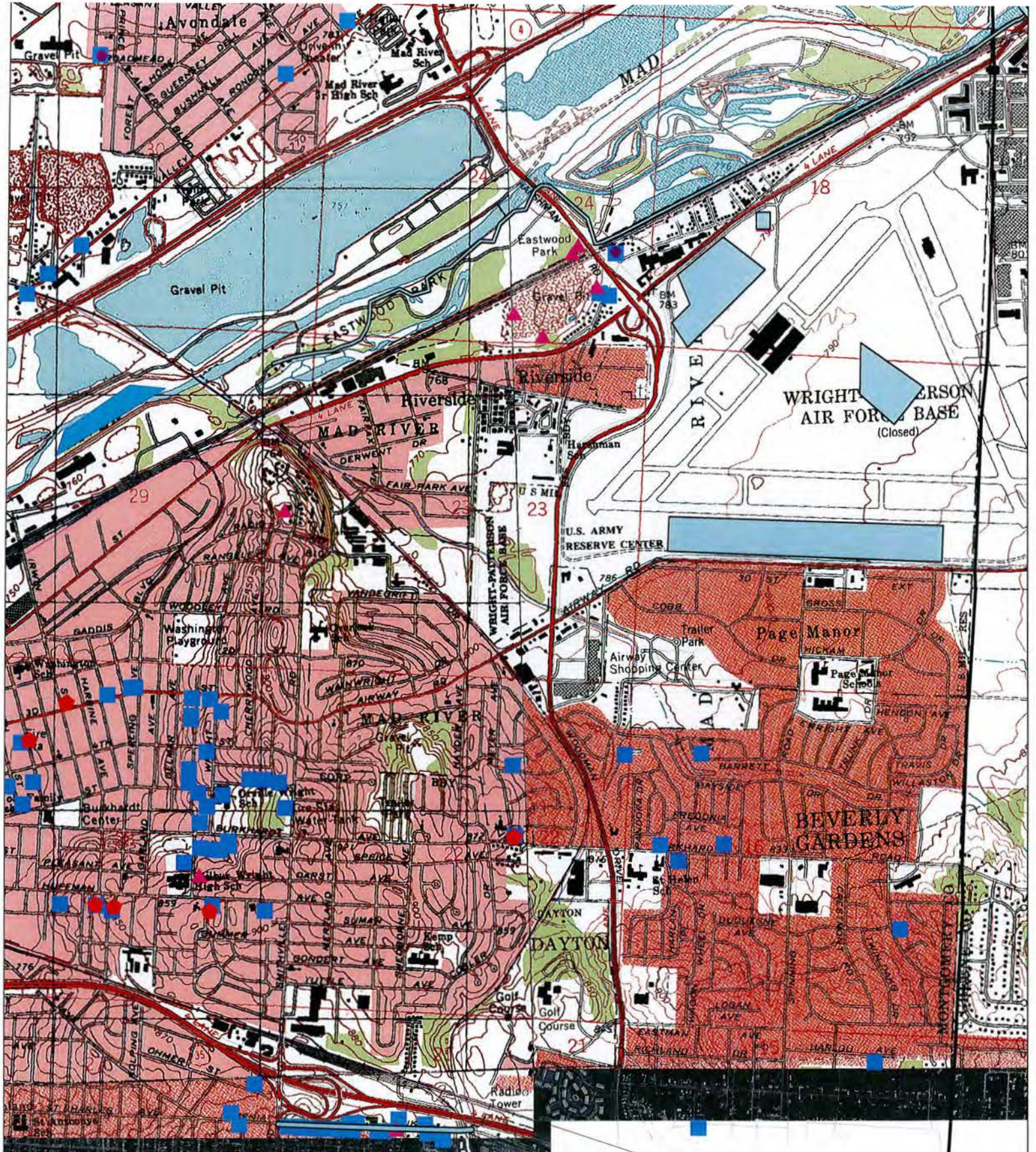
Attachment

**OHIO HISTORICAL SOCIETY**

*Ohio Historic Preservation Office*

1982 Velma Avenue, Columbus, Ohio 43211-2497 ph: 614.298.2000 fx: 614.298.2037  
[www.ohiohistory.org](http://www.ohiohistory.org)





## Ohio Historic Preservation Office

Ohio Historical Society

Tomography Range and Equipment Storage Facility  
Wright Patterson Air Force Base, Montgomery and Greene Counties, Ohio  
Map printed 10/20/2011

240 0 240 480 Meters



1:24000







## DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 88TH AIR BASE WING (AFMC)  
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

30 April 2012

Paul F. Woodruff, CRM  
88 ABW/CEANQ  
1450 Littrell Road  
Wright-Patterson AFB OH 45433-5209

Mr. Mark Epstein  
Department Head, Resource Protection & Review  
Ohio Historic Preservation Office  
800 East 17th Ave  
Columbus OH 43211-2497

Dear Mr. Epstein

Wright-Patterson Air Force Base (WPAFB) is preparing an Environmental Assessment (EA) in accordance with the requirements of the National Environmental Policy Act (NEPA) to assess the potential environmental impacts of installing a Tomography Range and Equipment Storage Facility in Area B of WPAFB. The range would support the Sensor Directorate's tomography mission. The proposed location for the range and storage facility is a vacant area (approximately 13 acres) in the southwest corner of Area B, as shown on Attachment 1. It is our opinion that the proposed undertaking would have no adverse effect on any historic properties listed or eligible for listing on the National Register of Historic Places. In accordance with 36 CFR 800.11(e), we are submitting the following documentation to support this determination.

Description of the undertaking. The project includes installing twelve (12) fifty-foot towers with guy wires equally spaced in a circular pattern approximately 200 meters (650 feet) in diameter. Tower foundations, electric power supply, fiber optic lines, security lighting, lighting protection, compacted gravel drives, parking pad, and a 30' x 50' concrete block equipment storage facility would be constructed to operate and maintain the range (see Attachment 2). Minimal excavation would be required to construct the concrete tower foundations and poles. The twelve (12) tower foundations would require the excavation of a 4' x 6' area no more than 2' deep. The poles will be buried 77" inches in order to stabilize the antenna. The Area of Potential Effects for this undertaking is as delineated on Attachment 3.

Description of steps taken to identify historic properties. WPAFB has assessed all buildings on the installation that are 50 years old or older, and has assessed buildings for exceptional significance relating to the Cold War. As part of the Integrated Cultural Resources Management Plan at WPAFB, surveys have been conducted encompassing the entire Base to locate historic and prehistoric archaeological sites. Numerous archaeological surveys have been conducted at WPAFB beginning in the 1990's with the US Army Corps of Engineers Research Lab and continuing with various other contractors resulting in identification of eligible and non-eligible

sites (Attachment 4, 2011 WPAFB-ICRMP maps). A Phase I archaeological survey of the project site was conducted with field work completed in March 2012. A letter report of the preliminary results of the field work is provided as Attachment 5. Based on the available information we have determined that there are no archaeological resources at the project site eligible for the National Register.

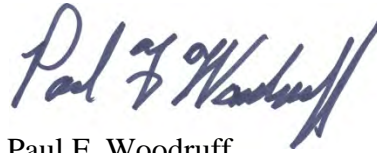
Description of the affected properties. There are no known historic properties within the boundary of the APE. A property search for any off Base historic properties, and a pedestrian survey (Attachment 3, photos) resulted in no eligible or potentially eligible properties identified within the APE (see Attachment 6, property search). The closest historic property to the project site is the Wright Field Runway, a contributing resource of the Wright Field Historic District; however the boundary of the district is more than 600 feet away from the project site and is screened by mature trees. The project site is screened by mature trees on the east, north and west sides and is bounded by modern commercial development on the south side (see Attachment 3 for photos). The 13 acre project site within the APE has undergone a Phase I Archaeological Survey to determine if any archaeological resources might be present at the project location. A review of available documentation and aerial photography has indicated that the site was farmed up until its purchase by the Air Force in 1942. The survey did not identify any prehistoric or historic archaeological resources.

Description of the undertaking's effects on historic properties. The only potential effect of construction of the project would be visual since the facility would produce little, if any noise. It is our opinion that construction of the Tomography Range would not adversely affect the Wright Field Historic District or its Triangular Runway. Little if any of the fifty foot tall towers would be visible to anyone within the historic district due to distance and the screening trees along the east and north side of the site. The trees in this area are approximately 40 to 50 feet in height with thick underbrush. The same can be said for the residential properties along the west side of the site including the bike path. There are no known historic properties in that area and the area is well screened by trees along the west boundary. There are no known historic properties along the south boundary. The properties along the south side of the site are modern commercial developments less than fifty years of age and of no historic or architectural significance. Therefore, in accordance with 36 CFR 800.5(b), we have determined the proposed construction of a Tomography Range would have no adverse effect on historic properties.

WPAFB is consulting with the four Native American Tribes who requested consultation when ground disturbing activities on previously undisturbed land is proposed.

Please review the information and inform us of your concurrence with the no adverse effect determination. Should you have questions, I can be reached at 937-257-1374 or via email at paul.woodruff@wpafb.af.mil.

Sincerely

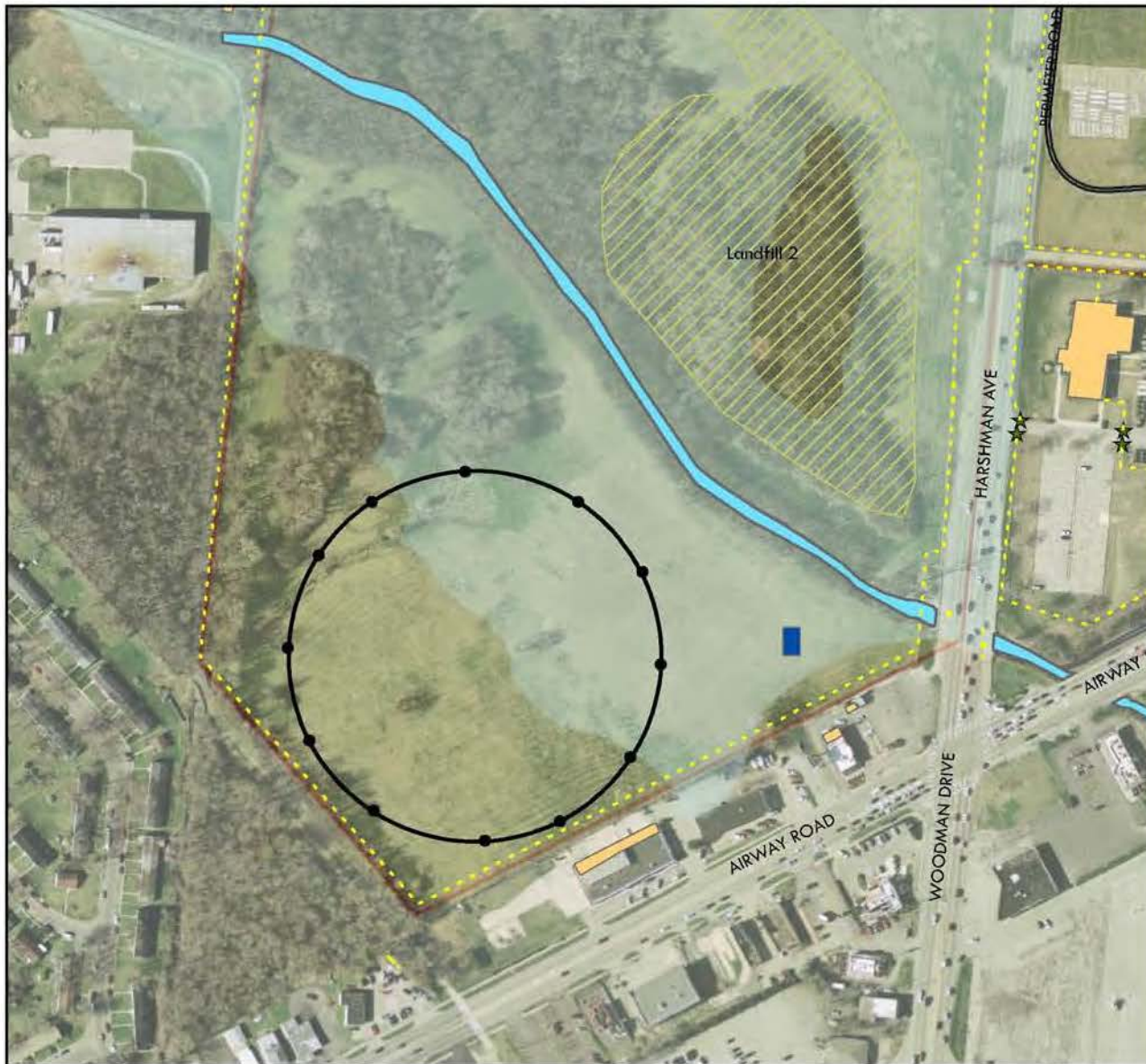
A handwritten signature in blue ink, reading "Paul F. Woodruff". The signature is stylized with a large initial "P" and a long, sweeping underline.

Paul F. Woodruff  
Cultural Resources Manager  
Environmental Quality Section  
Environmental Branch

Attachments:

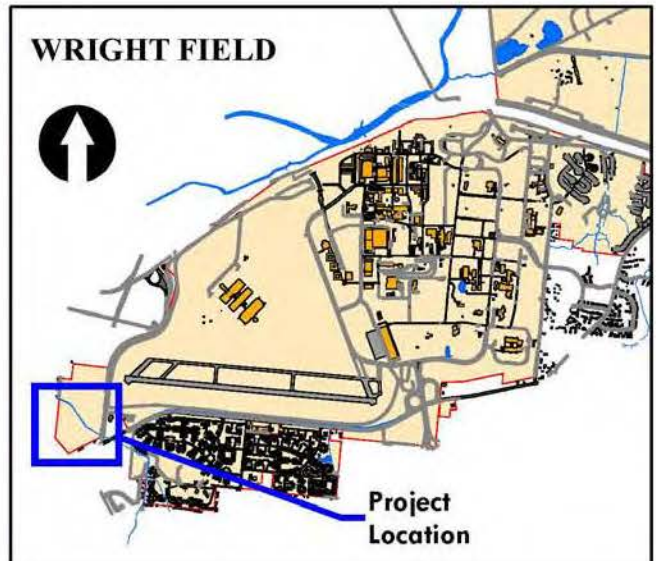
1. Site Location Map
2. Project drawings
3. APE Map and photos
4. WPAFB Archaeological Mapping (ICRMP 2011)
5. Archaeology survey preliminary report
6. Property search results





Proposed Site Development: Tomography Range & Equipment Storage Facility

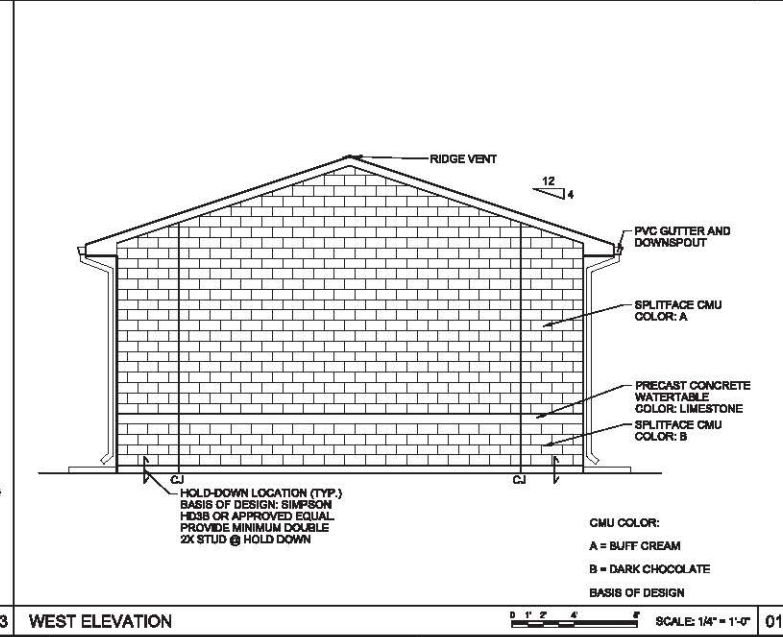
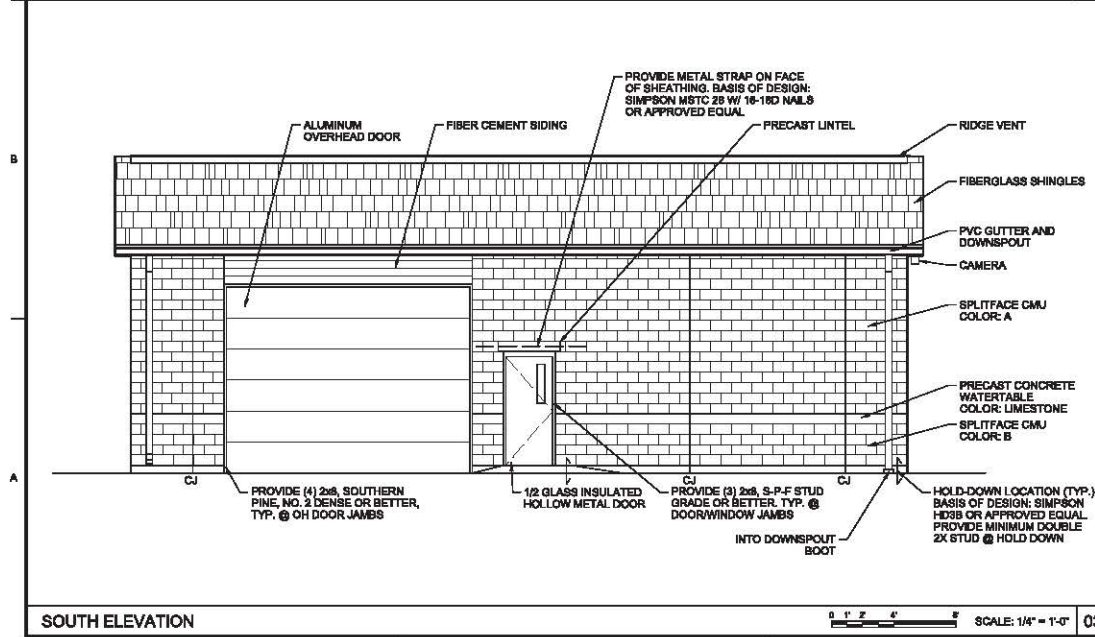
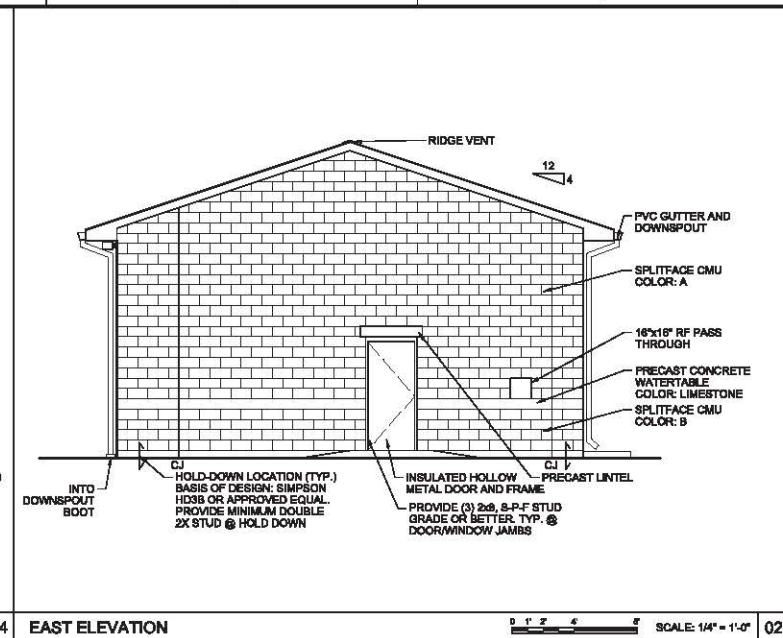
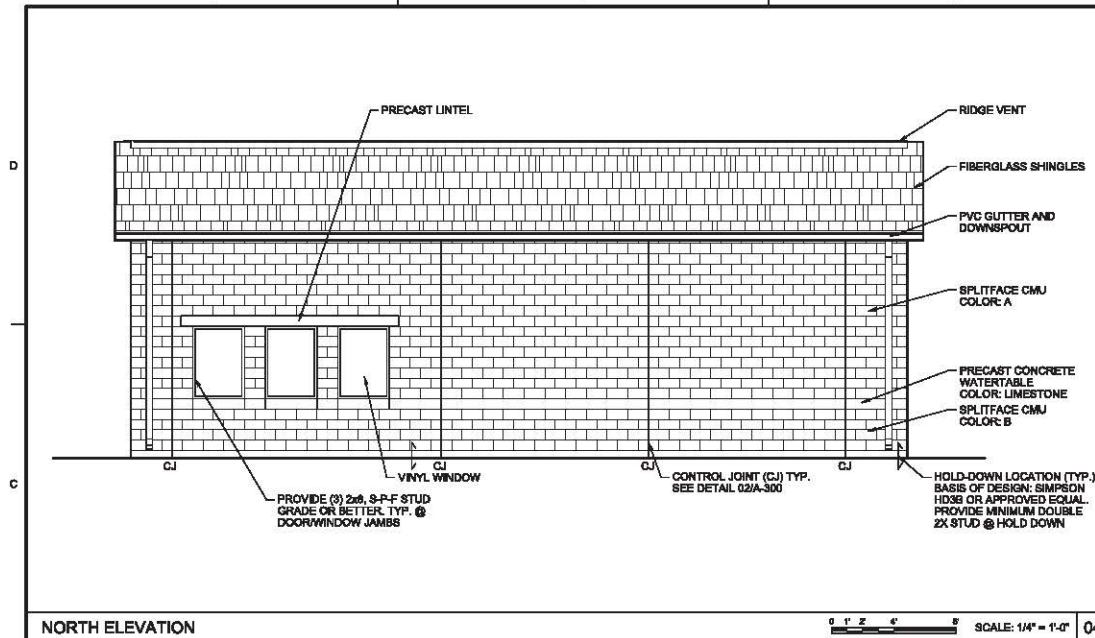
SEP 2010



Proposed Location for Tomography Range and Equipment Storage Facility  
Area B, Wright-Patterson AFB







DATE	10/04/2012
DESIGNED BY	U.S. ARMY CORPS OF ENGINEERS
CHECKED BY	U.S. ARMY CORPS OF ENGINEERS
APPROVED BY	U.S. ARMY CORPS OF ENGINEERS
PROJECT NO.	1004-2012-001
PROJECT NAME	1004-2012-001
PROJECT LOCATION	LOUISVILLE, KENTUCKY
PROJECT DESCRIPTION	CONTRACT TRANSPORTATION RANGE INSULATION THROUGH AIR FORCE BASE, LTD.
<b>ELEVATIONS</b>	
<b>SHEET IDENTIFICATION</b> <b>A-201</b> <small>REVISED 10/04/2012</small>	





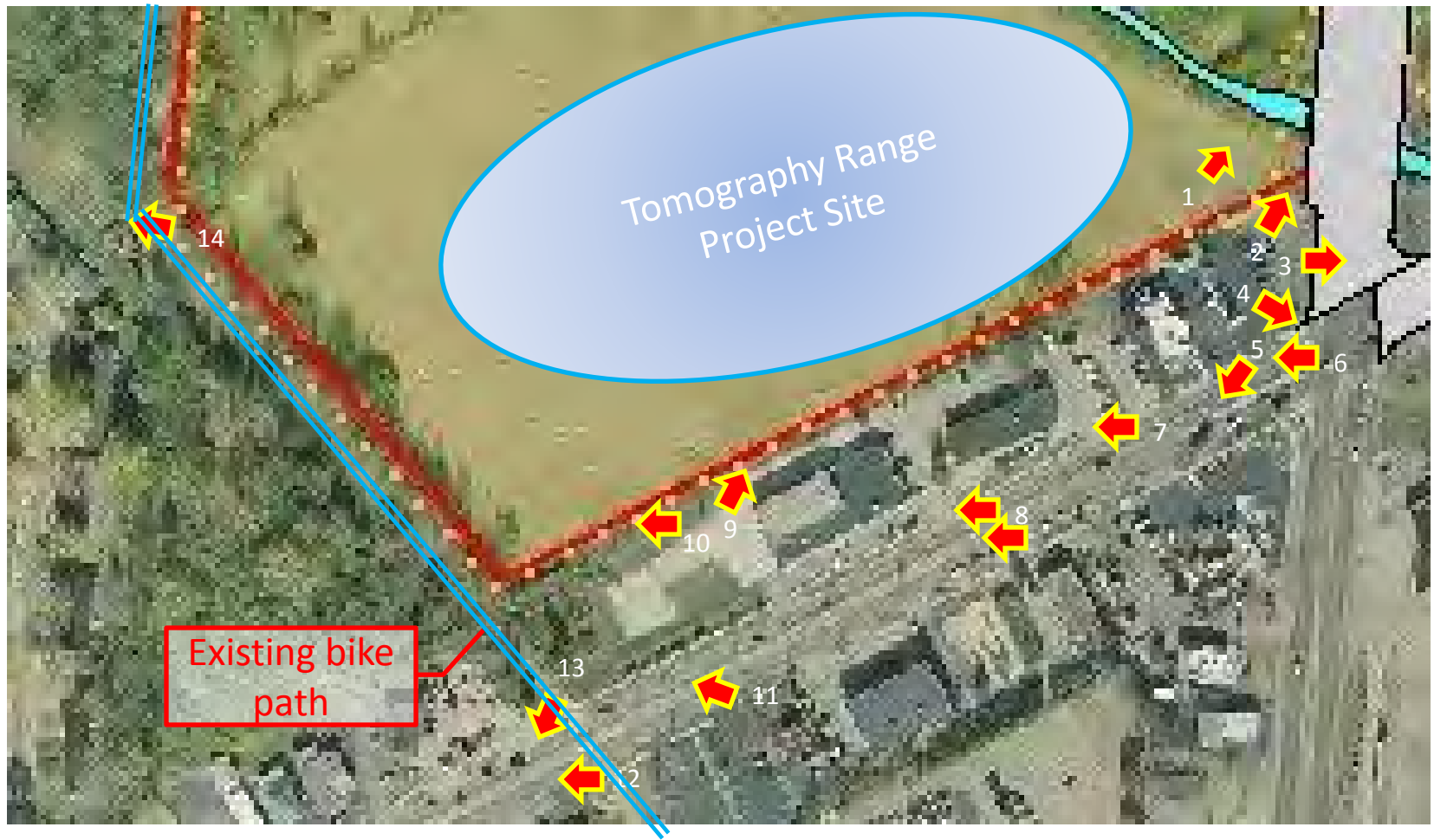
North

**Legend**

Wright-Patterson AFB Property line	
Tomography Range project location	
Wright Field Historic District Boundary	
Area of Potential Effects (APE)	
Photograph location / direction	

Aerial view of Tomography Range APE with ground photo indicators



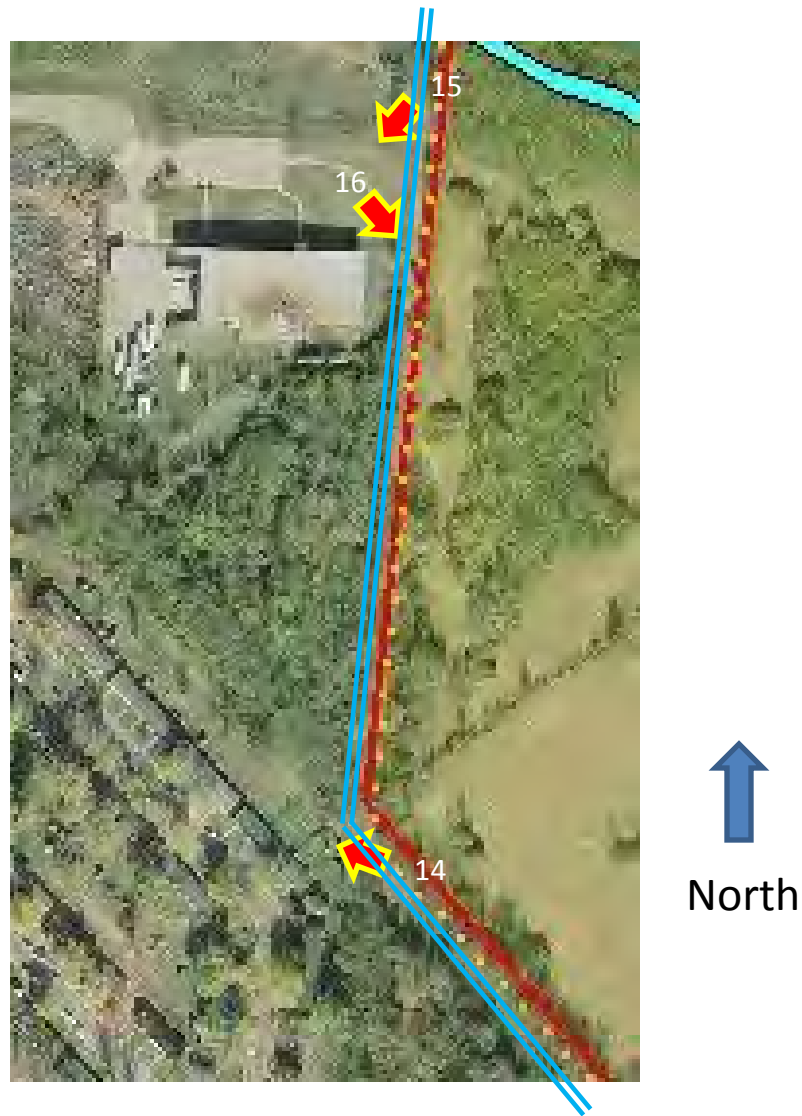


Photograph location / direction



North

Aerial view of Tomography Range APE with ground photo indicators



Photograph location / direction	#
---------------------------------	---

Aerial view of Tomography Range APE with ground photo indicators



Photo 1



Photo 2





Photo 3



Photo 4



Photo 5





Photo 6



Photo 7



Photo 8





Photo 9



Photo 10





Photo 11



Photo 12





Photo 13



Photo 14



Photo 15





Photo 16



*Leadership • Excellence • Innovation*

[www.labatenv.com](http://www.labatenv.com)

**Headquarters – Bellevue, NE  
402. 291.2362**

April 2, 2012

Ms. Karen Beason  
88ABW CEAOR  
1450 Littrell Rd  
Wright-Patterson Air Force Base, OH 45455-5261

Reference: FA8601-11-D-0003-0007, Change #1: Environmental Assessment for Tomography Range, WPAFB, OH

Dear Ms. Beason

This letter report summarizes the results of the Phase I archaeological fieldwork conducted as part of the Environmental Assessment for the proposed Tomography Range at Wright-Patterson AFB, Ohio. Labat Environmental, Inc. (LEI) and Hardlines Design Company (HDC) archaeologists conducted the fieldwork for the project between March 20 and March 30, 2012.

LEI and HDC archaeologists began the investigation by conducting an intensive pedestrian survey of the project area using transects spaced no greater than five meters apart. The survey did not identify any prehistoric or historic archaeological resources but did identify widely scattered surface refuse as well as four push piles containing some refuse. This refuse consisted of various items including bottle glass, metal fragments, pipe fragments, wood fragments, metal and wood fence posts. All of the refuse items were determined in the field to be modern disturbance and therefore not eligible for consideration as a historic archaeological resource. These items were noted in field notes but were not formally recorded or collected.

After completion of the pedestrian survey, LEI and HDC archaeologists conducted subsurface testing of the project area. The archaeologists began by setting up a 15 x 15 meter grid across the project area oriented north-south. A total of 22 grid lines were established, each grid line was individually lettered (A-X) and each STP location within the each grid line was numbered consecutively from north to south. The grid established a total of 238 STPs within the project area. Each STP measured 0.5 x 0.5 meters and was excavated following soil stratigraphy. All of the excavated soils were passed through 0.64 centimeter (¼ inch) mesh hardware cloth to recover any artifacts. All of the 238 STPs were negative for prehistoric and historic archaeological resources. Some of the STPs however, did contain refuse items in the upper stratum. All of these refuse items were determined in the field to be modern disturbance and therefore not eligible for consideration as a historic archaeological resource. These items were noted in field forms but not collected.

The preliminary results of the fieldwork suggest the project area does not contain significant archaeological resources that would adversely affect the proposed project. The pedestrian survey and the subsurface testing did not identify any prehistoric or historic archaeological resources. A more complete discussion of the fieldwork results and recommendations will be presented in the technical report for the project.



If you have any questions or require additional information, please contact me at 714.606.0303 or via email at robert.ramirez@labatenv.com.

Sincerely,

A handwritten signature in black ink, appearing to be 'R. Ramirez', with a stylized, cursive script.

Robert Ramirez, M.A., RPA  
Senior Archaeologist  
Labat Environmental, Inc.

cc: Richard Leu, ASC/PKC  
Jo Lynn Anderson, 88ABW/CEAOR  
Paul Woodruff, 88ABW/CEANQ  
Kelly Maiorana, LEI  
Bill Ohlmeyer, LEI

# Property Search Attachment 6

Parcel ID	Physical Address	Legal Description	Year Built	Current Use
I39 00114 0002		401 TOWANDA CIR		Residential Vacant Lot
I39 00114 0014		7-2-23 STRIP B/O RR		Public Park Space (Easement)
I39 00114 0015		7-2-23		Commercial Vacant Lot
I39 00114 0016		7-2-23		Commercial Vacant Lot
I39 00114 0022		7-2-23		Commercial Vacant Lot
I39 00114 0023		7-2-23		Commercial Vacant Lot
I39 00114 0025	4873 Airway Rd	7-2-23	1986	Burger King Restaurant
I39 00114 0026	4876 Airway Rd	7-2-23	1975	Garage
I39 00114 0027	4902 Airway Rd	7-2-22-23	1990	Rally's Restaurant
I39 00122 0026	519 Glendean Ave	259 FLORAL PK	1947	House (Single-story, Bungalow)
I39 00122 0027		260 FLORAL PK		Residential Vacant Lot
I39 00122 0028	507 Glendean Ave	261 FLORAL PK	1950	House (Single-story, Bungalow)
I39 00122 0029	3928 Moriah Rd	262 FLORAL PK	1954	House (Single-story, Bungalow)
I39 00122 0030	501 Glendean Ave	263 FLORAL PK	1940	House (Single-story, Cape Cod)
I39 00122 0031	495 Glendean Ave	264 FLORAL PK	1960	House (Single-story, Bungalow)
I39 00122 0032	491 Glendean Ave	265 FLORAL PK	1965	House (Single-story, Ranch)
I39 00122 0033	487 Glendean Ave	266 FLORAL PK	1943	House (Single-story, Bungalow)
I39 00123 0001	4755 Airway Rd	266 AERIAL PK 1ST ADD	1948	Dry Cleaning/Laundry
I39 00123 0002		265 AERIAL PK 1ST ADD		Parking Lot
I39 00123 0003	4763 Airway Rd	264 AERIAL PK 1ST ADD	1950	Retail Store
I39 00123 0004	4765 Airway Rd	263 AERIAL PK 1ST ADD	1950	Retail Store
I39 00123 0005	4769 Airway Rd	261,62 AERIAL PK 1ST ADD	1954	Retail Store
I39 00123 0007	4777 Airway Rd	258,59,60 AERIAL PK 1ST	1954	Service Station/Convenience Store
I39 00123 0010		257 AERIAL PK 1ST ADD		Commercial Vacant Lot
I39 00123 0011		256 AERIAL PK 1ST ADD		Commercial Vacant Lot
I39 00123 0012		255 & VAC ST		Commercial Vacant Lot
I39 00123 0013		253 & VAC ST		Commercial Vacant Lot
I39 00123 0014		252 & VAC ST		Commercial Vacant Lot
I39 00123 0015		228 AERIAL PK 1ST ADD		Commercial Vacant Lot
I39 00123 0016	4814 Airway Rd	227 AERIAL PK-1	1967	Bar, Lounge/Auto Parts, Service
I39 00123 0017	4812 Airway Rd	226 AERIAL PK-1	1969	Dairy Queen Restaurant
I39 00123 0018		227 AERIAL PK-1		Parking Lot
I39 00123 0019		224 AERIAL PK-1		Parking Lot
I39 00123 0020		223 AERIAL PK-1		Parking Lot
I39 00123 0027		268 AERIAL PK		Parking Lot
I39 00123 0028	4776 Airway Rd	267 PT & VAC RD AERIAL PK	1966	Bar, Lounge
I39 00123 0029	4762 Airway Rd	267 PT & VAC RD AERIAL PK	1950	Auto Parts/Service
I39 00123 0030		272 PT VAC RD ARIEL PK-1		Commercial Vacant Lot
I39 00123 0031	18 Meyer Ave	254 PT VAC RD AERIAL	1956	Church
I39 00123 0033		7-2-23		Commercial Vacant Lot
I39 00123 0035	4770 Airway Rd	1 INTERNATIONAL FOODS PLAT	1970	Retail Store
I39 00123 0036	4790 Airway Rd	01 A & C INCORPORATED PLAT	1990	Manufacturing/Warehouse
I39 00124 0006		234 AERIAL PARK 1ST ADD		Parking Lot
I39 00124 0007		235 AERIAL PK 1ST ADD		Parking Lot
I39 00124 0009	4856 Airway Rd	236-237 AERIAL PK	1994	McDonald's Restaurant
I39 00124 0010		PT 238 AERIAL PK		Parking Lot
I39 00124 0011		239 PT AERIAL PK		Parking Lot
I39 00124 0013	4873 Airway Rd	243 PT-240,1,2 AERIAL PK-1	1977	Wendy's Restaurant
I39 00124 0014		243 PT AERIAL PK 1ST ADD		Parking Lot
I39 00124 0015		244 AERIAL PK 1ST ADD		Commercial Vacant Lot
I39 00124 0016		245 AERIAL PK 1ST ADD		Commercial Vacant Lot
I39 00124 0017	4835 Airway Rd	246 AERIAL PK 1ST ADD	1965	Retail Store
I39 00124 0018		247 AERIAL PK 1ST ADD		Commercial Vacant Lot
I39 00124 0019		248 AERIAL PK 1ST ADD		Commercial Vacant Lot
I39 00124 0020		249 AERIAL PK 1ST ADD		Commercial Vacant Lot
I39 00124 0021		250 AERIAL PK 1ST ADD		Commercial Vacant Lot
I39 00124 0022	4817 Airway Rd	251 AERIAL PK 1ST ADD	1952	Retail Store
R72215417 0001	1962 Radio Rd	82175 WRIGHTVIEW, IND PARK 1	1995	Light Manufacturing
R72215417 0002		82176 WRIGHTVIEW, IND PARK 1		Commercial Vacant Lot
R72215417 0004		PRS 79418		Public Park Space (Easement)



July 3, 2012

Paul Woodruff, Cultural Resources Manager  
Environmental Quality Section  
Environmental Branch  
88 ABW/CEANQ  
1450 Littrell Road  
Wright-Patterson AFB OH 45433-5209

Re: Tomography Range & Equipment Storage Facility

Dear Mr. Woodruff,

This is in response to correspondence from your office dated April 30, 2012 (received May 4, 2012), regarding the above referenced undertaking. Comments of the Ohio Historic Preservation Office (OHPO) are offered under provisions of the National Historic Preservation Act of 1966, as amended (16 USC 470 with implementing regulations at 36 CFR 800).

Wright-Patterson Air Force Base proposes to install a tomography range consisting of twelve (12) fifty-foot towers with guy wires equally spaced in a circular pattern approximately 650 feet in diameter. This project also includes the construction of tower foundations, electric power supply, fiber optic lines, security lighting, lighting protection, compacted gravel access drives, a parking pad and a 30' x 50' concrete block equipment storage facility would be constructed to support range functions. The proposed tomography range will be located in the southwest corner of Area B, approximately 600 feet from the boundary of the Wright Field Historic District. You have requested the comments of the Ohio Historic Preservation Office (OHPO) regarding the effects of this project on historic properties.

Based on the information provided, I concur that the proposed project will have no adverse effect on historic properties. No further coordination is required unless there are changes to the project scope. In such a situation, this office should be contacted as per 36 CFR Section 800.13.

If you have any questions, please contact me by phone at (614) 298-2000 or by email at [jbertram@ohiohistory.org](mailto:jbertram@ohiohistory.org). Thank you.

Sincerely,

Jamie Bertram, Project Reviews Manager  
Resource Protection and Review

OHIO HISTORICAL SOCIETY

Ohio Historic Preservation Office

1982 Velma Avenue, Columbus, Ohio 43211-2497 ph: 614.298.2000 fx: 614.298.2037  
[www.ohiohistory.org](http://www.ohiohistory.org)

OHPO 2011-GRE-17816

## **MIAMI CONSERVANCY DISTRICT**

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**DEPARTMENT OF THE AIR FORCE**  
**HEADQUARTERS 88TH AIR BASE WING (AFMC)**  
**WRIGHT-PATTERSON AIR FORCE BASE, OHIO**

13 October 2011

88 ABW/CEANQ  
1450 Littrell Road, Building 22  
Wright-Patterson AFB OH 45433-5209

Kurt A. Rinehart, Chief Engineer  
Miami Conservancy District  
38 East Monument Avenue  
Dayton, OH 45402

Dear Mr. Rinehart:

The U.S. Air Force is preparing an Environmental Assessment in accordance with the National Environmental Policy Act to analyze the potential impacts from installing antenna towers and a storage facility to support the relocation of the Sensors Directorate Tomography mission to Area B of Wright-Patterson Air Force Base (WPAFB). The proposed facilities are to improve the efficiency of Air Force Research Laboratory Sensors Directorate (AFRL/RVRT) tomography research and development activities. The purpose of this letter is to notify you of the proposed project and request your evaluation of potential impacts this project may have on flood protection, water resources, and water quality under the purview of the Miami Conservancy District.

The proposed range includes installation of 12 antenna towers, each 50 feet tall, on concrete foundations placed in a circular pattern approximately 650 feet in diameter. An access road, parking lot, and equipment storage building (1,500 square feet) are proposed for operation and maintenance of the range. The tomography range would look similar to the one shown in Attachment 1. The preferred location is on approximately 13 acres of open area in the southwest corner of Tillman Pit in Area B of WPAFB as shown on Attachment 2. The project area is bordered by Airway Road to the south, Woodman Drive/Harshman Avenue to the east, Lilly Creek to the north, and Creekside Trail to the west. This location is below Huffman Dam and a portion of the tomography range would be within the 100-year floodplain of Lilly Creek. The project area is at an elevation of approximately 788 feet MSL.

Thank you for your assistance. If there are any questions or additional detail is needed, please contact me by telephone at 937-257-4857 or by e-mail at [darryn.warner@wpafb.af.mil](mailto:darryn.warner@wpafb.af.mil).

Sincerely,

Darryn M. Warner  
Natural Resources Program Manager  
Environmental Quality Section  
Asset Management Division

cc: Karen Beason, NEPA Manager, WPAFB

Attachment 1: Photograph  
Attachment 2: Location Map

ATTACHMENT 1: PHOTOGRAPH



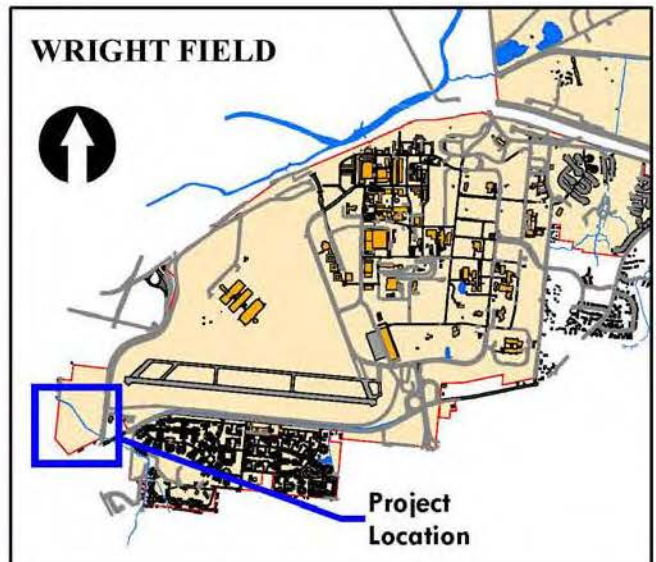
Photograph 1: A similar configuration to the proposed Tomography Range at Tillman Pit





Proposed Site Development: Tomography Range & Equipment Storage Facility

SEP 2010



Proposed Location for Tomography Range and Equipment Storage Facility  
Area B, Wright-Patterson AFB



**MIAMI  
CONSERVANCY  
DISTRICT**

*BOARD OF DIRECTORS*  
William E. Lukens  
Gayle B. Price, Jr.  
Mark G. Rentschler

*GENERAL MANAGER*  
Janet M. Bly

October 24, 2011

Mr. Darryn M. Warner  
Natural Resources Program Manager  
88 ABW/CEANQ  
1450 Littrell Road, Building 22  
Wright-Patterson AFB OH 45433-5209

Dear Mr. Warner:

The Miami Conservancy District (MCD) staff has reviewed the proposed antenna towers and storage facility located north of Airway Road and east of Harshman Road in Area B of Wright Patterson Air Force Base. The proposed development is downstream of Huffman Dam and would not affect the MCD flood protection system. MCD does not regulate the floodplain areas along Lilly Creek. For information regarding the development in the Lilly Creek floodplain, please contact the City of Riverside. MCD has no objections to, or additional comments regarding the proposed development.

Please contact me if you require additional information.

Sincerely,

Kurt A. Rinehart  
Chief Engineer

File: Huffman RB WPAFB

## **FLOODPLAIN DEVELOPMENT CORRESPONDENCE**



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# **FLOOD DAMAGE PREVENTION REGULATIONS**

## **SPECIAL PURPOSE**

## **FLOOD DAMAGE REDUCTION**

## **RESOLUTION**

## **MONTGOMERY COUNTY, OHIO**

### **SECTION 1.0: GENERAL PROVISIONS**

#### **1.1 Statutory Authorization**

This resolution is adopted pursuant to authorization contained in Sections 307.37 and 307.85 of the Ohio Revised Code. This resolution adopts regulations for areas of special flood hazard that are necessary for participation in the National Flood Insurance Program. Therefore, the Board of County Commissioners of Montgomery County, State of Ohio does ordain as follows:

#### **1.2 Findings of Fact**

The unincorporated areas of Montgomery County, Ohio have special flood hazard areas that are subject to periodic inundation which may result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base. Additionally, structures that are inadequately elevated, flood proofed, or otherwise protected from flood damage also contribute to the flood loss. In order to minimize the threat of such damages and to achieve the purposes hereinafter set forth, these regulations are adopted.

#### **1.3 Statement of Purpose**

It is the purpose of these regulations to promote the public health, safety and general welfare, and to:

- A. Protect human life and health;
- B. Minimize expenditure of public money for costly flood control projects;
- C. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- D. Minimize prolonged business interruptions;
- E. Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in areas of special flood hazard;
- F. Help maintain a stable tax base by providing for the proper use and development of areas of special flood hazard so as to protect property and minimize future flood blight areas;
- G. Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions;
- H. Minimize the impact of development on adjacent properties within and near flood prone areas;
- I. Ensure that the flood storage and conveyance functions of the floodplain are maintained;

- B. For all development activities subject to the standards of Section 3.10(A), a Letter of Map Revision.

### **3.8 Revoking a Floodplain Development Permit**

A floodplain development permit shall be revocable, if among other things, the actual development activity does not conform to the terms of the application and permit granted thereon. In the event of the revocation of a permit, an appeal may be taken to the Variance Board in accordance with Section 5 of these regulations.

### **3.9 Exemption from Filing a Development Permit**

**An application for a floodplain development permit shall not be required for:**

- A. Maintenance work such as roofing, painting, and basement sealing, or for small nonstructural development activities (except for filling and grading) valued at less than \$5,000.
- B. Development activities in an existing or proposed manufactured home park that are under the authority of the Ohio Department of Health and subject to the flood damage reduction provisions of the Ohio Administrative Code Section 3701.
- C. Major utility facilities permitted by the Ohio Power Siting Board under Section 4906 of the Ohio Revised Code.
- D. Hazardous waste disposal facilities permitted by the Hazardous Waste Siting Board under Section 3734 of the Ohio Revised Code.
- E. Development activities undertaken by a federal agency and which are subject to Federal Executive Order 11988 – Floodplain Management.**

**Any proposed action exempt from filing for a floodplain development permit is also exempt from the standards of these regulations.**

### **3.10 Map Maintenance Activities**

To meet National Flood Insurance Program minimum requirements to have flood data reviewed and approved by FEMA, and to ensure that Montgomery County flood maps, studies and other data identified in Section 1.6 accurately represent flooding conditions so appropriate floodplain management criteria are based on current data, the following map maintenance activities are identified:

#### **A. Requirement to Submit New Technical Data**

1. For all development proposals that impact floodway delineations or base flood elevations, the community shall ensure that technical data reflecting such changes is submitted to FEMA within six months of the date such information becomes available. These development proposals include:
  - a. Floodway encroachments that increase or decrease base flood elevations or alter floodway boundaries;
  - b. Fill sites to be used for the placement of proposed structures where the applicant desires to remove the site from the special flood hazard area;
  - c. Alteration of watercourses that result in a relocation or elimination of the special flood hazard area, including the placement of culverts; and

## Bob Baird

---

**From:** Koopman, Jeffrey LRL <Jeffrey.E.Koopman@usace.army.mil>  
**Sent:** Wednesday, December 28, 2011 8:17 AM  
**To:** Bob Baird  
**Cc:** Greg Gerding; Jennings, Todd J LRL  
**Subject:** RE: 3473490/WPAFB/Tomography - Floodplain and Floodway Compliance (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Bob

The plans were reviewed and the letter issued that no permitting was required. All of the proposed work and locations were shown on the plans that were reviewed. The only portion of the project that is being required to be elevated is the building and the access to the doors. Any other drives or pads should be kept flush with the existing surrounding grades as requested by Sensors. Since we have the location of the building determined the Mod will not be required.

-----Original Message-----

From: Bob Baird [mailto:Bob.Baird@bwsc.net]  
Sent: Friday, December 16, 2011 12:26 PM  
To: Koopman, Jeffrey LRL  
Cc: Gerding, Greg L LRL; Jennings, Todd J LRL; AJ Metzler  
Subject: RE: 3473490/WPAFB/Tomography - Floodplain and Floodway Compliance

Got your email below, the attached memorandum/hydraulic letter (HydraulicLetter.pdf) and FPMS Report (FPMS Report 1111-0908-3112.pdf). Thanks. The noted submitted documentation addresses the following:

- A. The first floor elevation (FFE) of a non-residential building needs to be equal to or above the 1% (or 100-year) floodplain. We agree. It is our intent to have the FFE at 1' above the 1% (or 100-year) flood elevation. This is good, sound engineering practice.
- B. As the building will be located on federal property, no local requirements are required to be met. In addition, no permits from ODNR or any other government agencies are necessary for locating the building within the floodplain and the soil build-up for the proper FFE elevation. Understand and concur.
- C. We are to locate the Tomography building as currently shown on drawing CS-100. The building is to be sited outside of the floodway but will be within the floodplain. Understand and concur.

What your submitted documentation does not address is the following:

- 1. ~25% of the range towers (assume 4 towers) fall within the floodway.
  - a. Is there any special permitting required for the construction activity related to the tower bases, the equipment pads and the elevated access drive?
  - b. Do the tower bases and related equipment pads need to be equal to or above the 1% (or 100-year) flood elevation?
- 2. ~25% of the range towers (assume 3 towers) fall within the floodplain. This is in addition to the 4 towers in the floodway.
  - a. Is there any special permitting required for the construction activity related to the tower bases, the equipment pads and the elevated access drive?

- b. Do the tower bases and related equipment pads need to be equal to or above the 1% (or 100-year) flood elevation?
- 3. The FFE of the Tomography building will require dirt build-up.
  - a. Will the dirt build-up be required by Huntington District to have revetment treatment to prevent potential dirt scouring from potential 100-year flooding? This topic was not part of the SOW.
  - b. Does Huntington District require that this site utilize "compensatory storage" of flood water storage that is equal in volume to the dirt build-up for the building? This topic was not part of the SOW.
  - c. Refer to the internet link as follows for an explanation of how the base flood elevations (BFE) are determined and this begins on page 93. [http://www.fema.gov/pdf/floodplain/is\\_9\\_complete.pdf#nameddest=bfe](http://www.fema.gov/pdf/floodplain/is_9_complete.pdf#nameddest=bfe) The figure on page 94 and related paragraphs explain how the floodplain is assumed to be filled by development. From our quick research, we think there could be some consideration to "compensatory storage".
  - d. If you recall I sent you a recent article about flooding along Lilly Creek now that the area residents are angry about. We do not need to compound the current flooding issues with the proposed dirt build-up/embankment.
- 4. Compliance with attached Executive Order 11988 - Floodplain Management (Reg-EO11988floodplain.pdf) which requires steps taken by any Federal agency seeking to develop within the floodplain.
  - a. Is USACE or WPAFB going to look into the noted required steps? This topic was not part of the SOW.
- 5. FPMS Report indicates that a "No-rise certification" is required for construction within the floodway.
  - a. Who is responsible for obtaining the "No-rise certification"? Government (USACE or WPAFB) or BWSC? This was not part of the project SOW.
  - b. Refer to the internet link as follows for an explanation on the "No-rise certification" from FEMA's website [http://www.fema.gov/plan/prevent/floodplain/nfipkeywords/no\\_rise.shtm](http://www.fema.gov/plan/prevent/floodplain/nfipkeywords/no_rise.shtm)  
<[http://www.fema.gov/plan/prevent/floodplain/nfipkeywords/no\\_rise.shtm](http://www.fema.gov/plan/prevent/floodplain/nfipkeywords/no_rise.shtm)> .
  - c. "Any project in a floodway must be reviewed to determine if the project will increase flood heights. An engineering analysis must be conducted before a permit can be issued. The community's permit file must have a record of the results of this analysis, which can be in the form of a No-rise Certification. This No-rise Certification must be supported by technical data and signed by a registered professional engineer. The supporting technical data should be based on the standard step-backwater computer model used to develop the 100-year floodway shown on the Flood Insurance Rate Map (FIRM) or Flood Boundary and Floodway Map (FBFM)."
- 6. The BWSC MOD proposal dated November 29, 2011.
  - a. What is USACE's position on awarding this proposed MOD?
  - b. The proposed MOD would help USACE on the above issues.

We want to get started again on this project and see it to its completion but we need answers to the above before we restart. Please advise.

Thanks.

Robert D. Baird, PE, LEED AP BD+C

Asst. Proj. Mgr. - Civil Engineer

Barge Waggoner Sumner & Cannon, Inc.

8280 Yankee Street  
Dayton, OH 45458-1806  
937.428.5228 Direct



937.438.0378 Office  
937.438.0379 Fax  
bob.baird@bwsc.net <mailto:bob.baird@bwsc.net>

bargewaggoner.com

-----Original Message-----

From: Koopman, Jeffrey LRL [mailto:Jeffrey.E.Koopman@usace.army.mil]  
<mailto:[mailto:Jeffrey.E.Koopman@usace.army.mil]>  
Sent: Thursday, December 15, 2011 9:38 AM  
To: Bob Baird  
Cc: Greg Gerding; Jennings, Todd J LRL  
Subject: WPAFB Tomography (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Bob

We have gone to our internal Hydraulics Section to review the Huntington requirements for location of this building. I have attached a copy of the memorandum from Hydraulics which states the floor elevation of the building needs to be equal to or above the 1%(100-year)flood plain. No permit is required because this is Federal Property. Please proceed with the design with the building in the location shown. If you have any questions please let me know. thanks

Jeffrey E. Koopman PE

Project Engineer

Army/Air Force Section

U.S. Army Corps of Engineers

Louisville District

Office 502-315-6420

Cell 502-438-5482

Classification: UNCLASSIFIED

Caveats: NONE

BWSC Privacy Clause

The information transmitted is intended only for the person or entity to which it is addressed and may contain confidential, proprietary, and/or privileged material. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender, delete the material from all computers, and destroy any copies of this document.

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Classification: UNCLASSIFIED  
Caveats: NONE



**DEPARTMENT OF THE ARMY**  
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE  
CORPS OF ENGINEERS  
P.O. BOX 59  
LOUISVILLE KY 40201-0059

<http://www.lrl.usace.army.mil/>

CELRL-ED-T

12 December 2011

MEMORANDUM FOR: Jeff Koopman, Project Manager, 600 Dr. Martin Luther King Jr. Place  
Room 973, Louisville, KY 40202

SUBJECT: Hydraulic Requirements for Construction within the 1% Chance Floodplain, Wright  
Patterson Air Force Base, Ohio.

1. Wright Patterson Air Force Base is located in southwest Ohio, northeast of Dayton in Montgomery County.
2. Our Hydrology & Hydraulic Design Section was requested by Mr. Jeff Koopman to provide floodplain policy guidance for the construction of a non-residential building at Wright Patterson Air Force Base that is within the 1% chance (100-year) flood plain but not within the floodway.
3. For structures located on federal properties, these structures must abide by regulations determined by the National Flood Insurance Program. For a non-residential building, there are two options available for the satisfactory construction that meets FEMA guidelines. The lowest first floor of this building must be equal to or greater than the 1% chance flood elevation. The other option is to flood proof the building up to the 1% chance flood elevation in lieu of raising the first floor of the structure to this flood frequency. No other restrictions apply.
4. As long as the building is located on federal property, possible local flood plain management guidelines that may be stricter than FEMA regulations are not required.
5. For this construction that is outside of the floodway, no permits are required through the Ohio Department of Natural Resources or any other government agencies.

A handwritten signature in black ink, reading "Richard L. Pruitt".

Richard L. Pruitt, P.E.  
Hydraulic Engineer  
Chief, Hydrology & Hydraulic  
Design Section

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**U.S. FISH AND WILDLIFE SERVICE**



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DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 88TH AIR BASE WING (AFMC)  
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

12 March 2012

88 ABW/CEANQ  
1450 Littrell Road, Building 22  
Wright-Patterson AFB OH 45433-5209

Dr. Mary Knapp  
U.S. Fish and Wildlife Service  
Ecological Services  
4625 Morse Road, Suite 104  
Columbus OH 43230

RE: Informal Section 7 Consultation, Tomography Range, Area B, Wright-Patterson AFB Ohio

Dear Dr. Knapp

Wright-Patterson Air Force Base (WPAFB) is preparing an Environmental Assessment in accordance with the requirements of the National Environmental Policy Act of 1969 to address environmental impacts associated with the installation of antenna towers and a storage facility to support the relocation of the Sensors Directorate Tomography mission in Area B of WPAFB. By way of this letter, WPAFB is seeking informal Section 7 consultation for the proposed project actions. The following species are considered to be in the range of the proposed project area:

1. Bald eagle (*Haliaeetus leucocephalus*), protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act
2. Indiana bat (*Myotis sodalist*), a federally endangered species
3. Eastern massasauga rattlesnake (*Sistrurus catenatus*), a federal candidate species
4. Clubshell mussel (*Pleurobema clava*), a federally endangered species
5. Snuffbox mussel (*Epioblasma triquetra*), a species proposed for listing as federally endangered
6. Rayed bean mussel (*Villosa fabalis*), a species proposed for listing as federally endangered

**Proposed Action**

The proposed range includes installation of 12 antenna towers, each 50 feet tall, on concrete foundations placed in a circular pattern approximately 650 feet in diameter. An access road, parking lot, and equipment storage building (1,500 square feet) are proposed for operation and maintenance of the range. The preferred location for the tomography range is approximately 13 acres of open area in the southwest corner of Tillman Pit in Area B of WPAFB, as shown on Attachment 1. This location is a vacant field and consists primarily of mowed grass with two trees in the middle of the field. The project area is bordered to the north-northeast by Lilly Creek, a wooded area to the west-southwest, and a commercial property to the southeast. WPAFB is requesting concurrence that the proposed action would have no effect and may affect, not likely to adversely affect the 6 species as described below.

- The bald eagle is protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The nearest bald eagle nest is over 1.5 miles from the base. While suitable habitat may be present within WPAFB, this habitat is not within the areas proposed to be impacted and the proposed project areas are not located within ½ mile of any known eagle nesting site; therefore, WPAFB has determined there will be no effect to the bald eagle.
- The Indiana bat is a federally endangered species. Mist net surveys in 2000 and 2007 detected Indiana bats within the base. Summer habitat requirements for the species are not well defined but the following are considered important:
  - (1) dead or live trees and snags with peeling or exfoliating bark, split tree trunk and/or branches, or cavities, which may be used as maternity roost areas;
  - (2) live trees (such as shagbark hickory and oaks) which have exfoliating bark;
  - (3) stream corridors, riparian areas, and upland woodlots which provide forage sites.

The WPAFB Integrated Natural Resources Management Plan previously identified the wooded area to the south-southwest of the project area as potentially suitable roosting habitat for Indiana bats. If it is determined that any trees are required to be removed from the proposed project site, the following impact and minimization measures would be implemented: Tree clearing only during the time period of 30 September through 1 April. Based on the above avoidance and minimization measures, WPAFB has determined the proposed project may affect, not likely to adversely affect the Indiana bat.

- Eastern massasauga rattlesnake is a federal candidate. The eastern massasauga is potentially present at WPAFB with records from the Warfighter Training Center (formerly Prime BEEF Training Area) and Twin Base Golf Course. Although the last documented record was from 1993 in the Warfighter Training Center, recent base wide survey efforts have been ongoing to try to detect the presence or probable absence of the species within the base. Eastern massasaugas use both upland and wetland habitat and these habitats differ by season. During the winter, massasaugas hibernate in low wet areas, primarily in crayfish burrows, but may use other structures. Presence of a water table near the surface is important for a suitable hibernaculum. In the summer, massasaugas use drier, open areas that contain a mix of grasses and forbs such as goldenrods and other prairie plants that may be intermixed with trees or shrubs. Adjoining lowland and upland habitat with variable elevations between are critical for the species to travel back and forth seasonally. As currently proposed, the project area is located in an area that is regularly mowed and previously disturbed; therefore, WPAFB has determined there will be no effect to the eastern massasauga from the Proposed Action.
- Clubshell is a federally listed endangered freshwater mussel. Neither the species nor the habitat exists within the proposed project area. The clubshell inhabits areas with sand or gravel substrate and also prefers areas with riffles and runs. The clubshell is potentially present in the Little Miami River and drainages where preferred habitat exists. As currently proposed, the stream to the north-northeast was identified as a perennial stream during the 2009 WPAFB Wetland and Stream Management Plan development, which would qualify it as potential habitat for the clubshell. This stream would not be impacted, as construction activities will be limited to the open field as depicted in Attachment 1; therefore, WPAFB has determined there would be no effect on the clubshell from the Proposed Action.

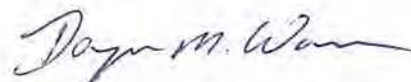


- Snuffbox is a federally listed endangered freshwater mussel. Neither the species nor the habitat exists within the proposed project area. The snuffbox occurs in swift currents of riffles and shoals over sand and gravel with occasional cobble and boulders. The snuffbox is known to be present in the Stillwater and Little Miami Rivers and drainages where preferred habitat exists. As currently proposed, the stream to the north-northeast was identified as a perennial stream during the 2009 WPAFB Wetland and Stream Management Plan development, which would qualify it as potential habitat for the snuffbox. This stream would not be impacted, as construction activities will be limited to the open field as depicted in Attachment 1; therefore, WPAFB has determined there would be no effect on the snuffbox from the Proposed Action.
- Rayed bean is a federally listed freshwater mussel. Neither the species nor the habitat exists within the proposed project area. The rayed bean is generally known from smaller headwater creeks, but records exist in larger rivers. They are usually found in or near shoal or riffle areas, and in the shallow, wave-washed areas of lakes. Substrates typically include sand and gravel, and are often associated with, and buried under the roots of, vegetation, including the water willow (*Justica americana*) and water milfoil (*Myriophyllum* sp.). The rayed bean is known to be present in the Great Miami River and is potentially present in perennial streams in Greene and Montgomery Counties where preferred habitat exists. As currently proposed, the stream to the north-northeast was identified as a perennial stream during the 2009 WPAFB Wetland and Stream Management Plan development, which would qualify it as potential habitat for the rayed bean. This stream would not be impacted, as construction activities will be limited to the open field as depicted in Attachment 1; therefore, WPAFB has determined there would be no effect on the rayed bean from the Proposed Action.

For these reasons, we conclude that constructing the 12 antennae towers and an equipment storage building as part of the Tomography Range project in Area B of WPAFB, Montgomery County, Ohio would have no effect on the bald eagle, eastern massasauga, clubshell mussel, snuffbox mussel, and rayed bean mussel and may affect, not likely to adversely affect the Indiana bat. We request concurrence with our determinations.

Thank you for your consideration. If you have any questions, please contact me at (937) 257-4857 or by email at [Darryn.Warner@wpafb.af.mil](mailto:Darryn.Warner@wpafb.af.mil).

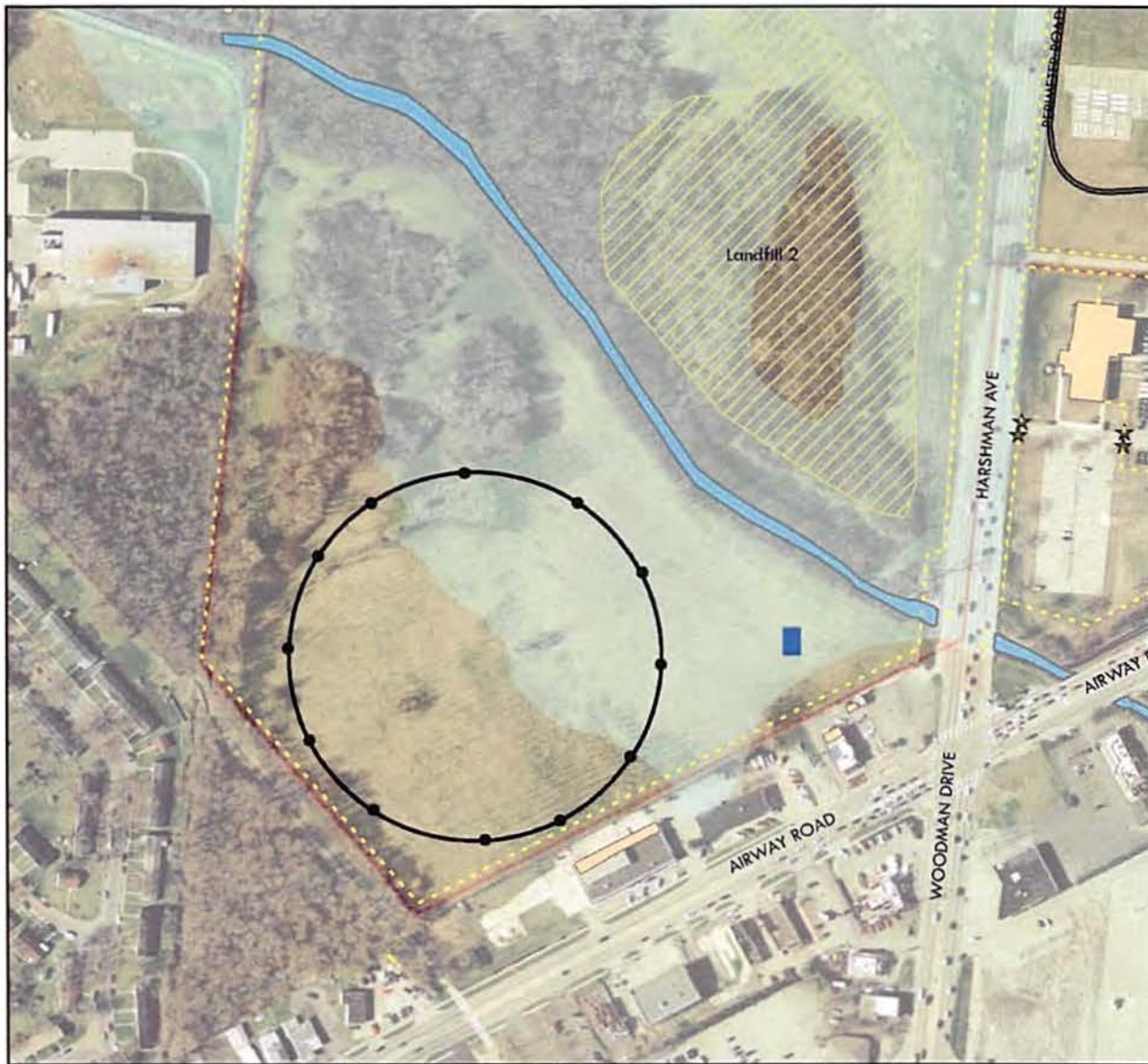
Sincerely



DARRYN M. WARNER  
Natural Resources Program Manager  
Environmental Quality Section

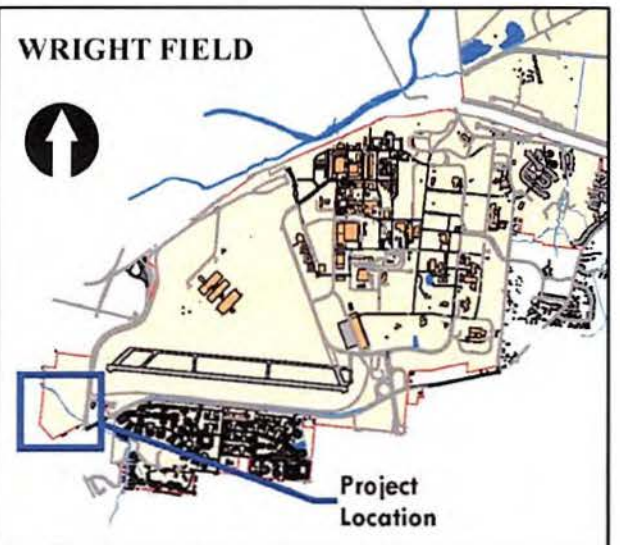
Attachment:  
Location Map and Proposed Site Design





Proposed Site Development: Tomography Range & Equipment Storage Facility

SEP 2010



Proposed Location for Tomography Range and Equipment Storage Facility  
Area B, Wright-Patterson AFB



ATTACHMENT 1: PHOTOGRAPH



Photograph 1: A similar configuration to the proposed Tomography Range at Tillman Pit



**From:** [Melanie\\_Cota@fws.gov](mailto:Melanie_Cota@fws.gov) [mailto:[Melanie\\_Cota@fws.gov](mailto:Melanie_Cota@fws.gov)]  
**Sent:** Thursday, April 19, 2012 2:47 PM  
**To:** Warner, Darryn M Civ USAF AFMC 88 ABW/CEANQ  
**Subject:** RE: Tomography Range Project

Hi Darryn,

Thanks for the information, that is most helpful. I would be comfortable with concurring with a may affect, Not Likely to Adversely Affect (NLAA) determination for the EMR given the information below but not sure that a no effect is still appropriate based on historical records. Do you want to change this determination or discuss? Also since there are going to be guy wires, are general recommendations to reduce impacts to migratory birds for these structures (typically communication towers) is :

Tower designs using guy wires for support which are proposed to be located in known raptor or waterbird concentration areas or daily movement routes, or in major diurnal migratory bird movement routes or stopover sites, should have daytime visual markers on the wires to prevent collisions by these diurnally moving species. (For guidance on markers, see *Avian Power Line Interaction Committee (APLIC)*).

Is there a way to install some sort of bird diverts on the antennae to prevent bird strikes?

Thanks! ~MC

Melanie Cota  
Fish and Wildlife Biologist  
U.S. Fish and Wildlife Service  
4625 Morse Road, Suite 104  
Columbus, OH 43230  
614-416-8993 Ext. 15  
614-416-8994 (Fax)  
[Melanie\\_Cota@fws.gov](mailto:Melanie_Cota@fws.gov)  
<http://fws.gov/midwest/ohio>

Working with others to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.

▼ "Warner, Darryn M Civ USAF AFMC 88 ABW/CEANQ" <[Darryn.Warner@wpafb.af.mil](mailto:Darryn.Warner@wpafb.af.mil)>

"Warner, Darryn M Civ USAF  
AFMC 88 ABW/CEANQ"

To<[Melanie\\_Cota@fws.gov](mailto:Melanie_Cota@fws.gov)>



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 88TH AIR BASE WING (AFMC)  
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

01 August 2012

88 ABW/CEANQ  
1450 Littrell Road, Building 22  
Wright-Patterson AFB OH 45433-5209

Dr. Mary Knapp  
U.S. Fish and Wildlife Service  
Ecological Services  
4625 Morse Road, Suite 104  
Columbus OH 43230

RE: Informal Section 7 Consultation, Tomography Range, Area B, Wright-Patterson AFB Ohio

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6. Rayed bean mussel (*Villosa fabalis*), a species proposed for listing as federally endangered

**Proposed Action**

The proposed range includes installation of 12 antenna towers, each 50 feet tall, on concrete foundations placed in a circular pattern approximately 650 feet in diameter. An access road, parking lot, and equipment storage building (1,500 square feet) are proposed for operation and maintenance of the range. The preferred location for the tomography range is approximately 13 acres of open area in the southwest corner of Tillman Pit in Area B of WPAFB, as shown on Attachment 1. This location is a vacant field and consists primarily of mowed grass with two trees in the middle of the field. The project area is bordered to the north-northeast by Lilly Creek, a wooded area to the west-southwest, and a commercial property to the southeast. WPAFB is requesting concurrence that the proposed action would have no effect and may affect, not likely to adversely affect the 6 species as described below.

- The bald eagle is protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The nearest bald eagle nest is over 1.5 miles from the base. While suitable habitat may be present within WPAFB, this habitat is not within the areas proposed to be impacted and the proposed project areas are not located within ½ mile of any known eagle nesting site; therefore, WPAFB has determined there will be no effect to the bald eagle.
- The Indiana bat is a federally endangered species. Mist net surveys in 2000 and 2007 detected Indiana bats within the base. Summer habitat requirements for the species are not well defined but the following are considered important:
  - (1) dead or live trees and snags with peeling or exfoliating bark, split tree trunk and/or branches, or cavities, which may be used as maternity roost areas;
  - (2) live trees (such as shagbark hickory and oaks) which have exfoliating bark;
  - (3) stream corridors, riparian areas, and upland woodlots which provide forage sites.

The WPAFB Integrated Natural Resources Management Plan previously identified the wooded area to the south-southwest of the project area as potentially suitable roosting habitat for Indiana bats. If it is determined that any trees are required to be removed from the proposed project site, the following impact and minimization measures would be implemented: Tree clearing only during the time period of 30 September through 1 April. Based on the above avoidance and minimization measures, WPAFB has determined the proposed project may affect, not likely to adversely affect the Indiana bat.

- Eastern massasauga rattlesnake is a federal candidate. The eastern massasauga is potentially present at WPAFB with records from the Warfighter Training Center (formerly Prime BEEF Training Area) and Twin Base Golf Course. Although the last documented record was from 1993 in the Warfighter Training Center, recent base wide survey efforts have been ongoing to try to detect the presence or probable absence of the species within the base. Eastern massasaugas use both upland and wetland habitat and these habitats differ by season. During the winter, massasaugas hibernate in low wet areas, primarily in crayfish burrows, but may use other structures. Presence of a water table near the surface is important for a suitable hibernaculum. In the summer, massasaugas use drier, open areas that contain a mix of grasses and forbs such as goldenrods and other prairie plants that may be intermixed with trees or shrubs. Adjoining lowland and upland habitat with variable elevations between are critical for the species to travel back and forth seasonally. As currently proposed, the project area is located in an area that is regularly mowed and previously disturbed; therefore, WPAFB has determined the proposed project may affect, not likely to adversely affect the eastern massasauga.
- Clubshell is a federally listed endangered freshwater mussel. Neither the species nor the habitat exists within the proposed project area. The clubshell inhabits areas with sand or gravel substrate and also prefers areas with riffles and runs. The clubshell is potentially present in the Little Miami River and drainages where preferred habitat exists. As currently proposed, the stream to the north-northeast was identified as a perennial stream during the 2009 WPAFB Wetland and Stream Management Plan development, which would qualify it as potential habitat for the clubshell. This stream would not be impacted, as construction activities will be limited to the open field as depicted in Attachment 1; therefore, WPAFB has determined there would be no effect on the clubshell from the Proposed Action.

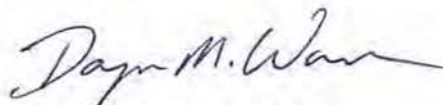


- Snuffbox is a federally listed endangered freshwater mussel. Neither the species nor the habitat exists within the proposed project area. The snuffbox occurs in swift currents of riffles and shoals over sand and gravel with occasional cobble and boulders. The snuffbox is known to be present in the Stillwater and Little Miami Rivers and drainages where preferred habitat exists. As currently proposed, the stream to the north-northeast was identified as a perennial stream during the 2009 WPAFB Wetland and Stream Management Plan development, which would qualify it as potential habitat for the snuffbox. This stream would not be impacted, as construction activities will be limited to the open field as depicted in Attachment 1; therefore, WPAFB has determined there would be no effect on the snuffbox from the Proposed Action.
- Rayed bean is a federally listed freshwater mussel. Neither the species nor the habitat exists within the proposed project area. The rayed bean is generally known from smaller headwater creeks, but records exist in larger rivers. They are usually found in or near shoal or riffle areas, and in the shallow, wave-washed areas of lakes. Substrates typically include sand and gravel, and are often associated with, and buried under the roots of, vegetation, including the water willow (*Justica americana*) and water milfoil (*Myriophyllum* sp.). The rayed bean is known to be present in the Great Miami River and is potentially present in perennial streams in Greene and Montgomery Counties where preferred habitat exists. As currently proposed, the stream to the north-northeast was identified as a perennial stream during the 2009 WPAFB Wetland and Stream Management Plan development, which would qualify it as potential habitat for the rayed bean. This stream would not be impacted, as construction activities will be limited to the open field as depicted in Attachment 1; therefore, WPAFB has determined there would be no effect on the rayed bean from the Proposed Action.

For these reasons, we conclude that constructing the 12 antennae towers and an equipment storage building as part of the Tomography Range project in Area B of WPAFB, Montgomery County, Ohio would have no effect on the bald eagle, eastern massasauga, clubshell mussel, snuffbox mussel, and rayed bean mussel and may affect, not likely to adversely affect the Indiana bat. We request concurrence with our determinations.

Thank you for your consideration. If you have any questions, please contact me at (937) 257-4857 or by email at [Darryn.Warner@wpafb.af.mil](mailto:Darryn.Warner@wpafb.af.mil).

Sincerely



DARRYN M. WARNER  
Natural Resources Program Manager  
Environmental Quality Section

Attachment:  
Location Map and Proposed Site Design



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

Ecological Services  
4625 Morse Road, Suite 104  
Columbus, Ohio 43230  
(614) 416-8993 / FAX (614) 416-8994

August 27, 2012

Darryn Warner  
Natural Resources Program Manager  
Environmental Quality Section  
88 ABW/CEANQ  
1450 Littrell Road, Building 22  
Wright-Patterson Air Force Base, Ohio 45433-5209

Dear Mr. Warner:

TAILS #: 03E15000-2012-I-1246

This is in response to your August 1, 2012 letter requesting consultation with the U.S. Fish and Wildlife Service (Service) under the Endangered Species Act of 1973, as amended regarding the proposed Tomography Range at Wright-Patterson Air Force Base (WPAFB). WPAFB is proposing to install multiple antenna towers and a storage facility to support the relocation of the Sensors Directorate Tomography mission in Area B.

There are no Federal wilderness areas, wildlife refuges, or designated critical habitat within the vicinity of the proposed site.

We have reviewed the proposed project and concur with your determination that the proposed activities are not likely to adversely affect the federally listed endangered **Indiana bat** (*Myotis sodalis*), and the **eastern massasauga** (*Sistrurus catenatus*), a federal candidate species. Our concurrence is based on the following:

**Indiana bat** – The project location is comprised of approximately 13 acres of open area consisting mainly of mowed grass with only two trees. The project area is bordered to the north-northeast by Lilly Creek, a wooded area to the west-southwest, and a commercial property to the southeast. Should any trees need be removed to complete the project, they would only be cut after September 30 and before April 1 to avoid impacting roosting bats. Therefore, we concur with your determination that the proposed action is not likely to adversely affect the Indiana bat.

**Eastern massasauga** – As currently proposed, the project areas is located in an area that is regularly mowed and previously disturbed. Massasaugas are unlikely to utilize this habitat. Therefore, we concur with your determination that the proposed action is not likely to adversely affect the eastern massasauga.

The proposed project lies within the range of the federally listed endangered **clubshell** (*Pleurobema clava*), **rayed bean** (*Villosa fabalis*), and **snuffbox** (*Epioblasma triquetra*). Due to the project type, size, and location, the project, as proposed, should not impact these species.



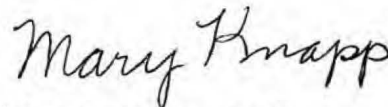
#### BALD EAGLE COMMENTS

The project lies within the range of the **bald eagle** (*Haliaeetus leucocephalus*). Bald eagles are protected under the Migratory Bird Treaty Act (16 U.S.C. 703-712; MBTA), and are afforded additional legal protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, BGEPA). Due to the project type, size, and location, the project, as proposed, should not impact this species.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the Endangered Species Act of 1973 (ESA), as amended, and are consistent with the intent of the National Environmental Policy Act of 1969 and the U. S. Fish and Wildlife Service's Mitigation Policy. This concludes consultation on this action as required by section 7(a)(2) of the Endangered Species Act. Should, during the term of this action, additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, consultation with the Service should be reinitiated to assess whether the determinations are still valid.

If you have questions, or if we may be of further assistance in this matter, please contact Angela Boyer at extension 22 in this office.

Sincerely,

A handwritten signature in cursive script that reads "Mary Knapp".

Mary M. Knapp, Ph.D.  
Field Supervisor

cc: ODNR, DOW, SCEA Unit, Columbus, Ohio

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## **NATIVE AMERICAN TRIBES**

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## DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 88TH AIR BASE WING (AFMC)

WRIGHT-PATTERSON AIR FORCE BASE, OHIO

7 May 2012

Paul F. Woodruff, CRM  
88 ABW/CEANQ  
1450 Littrell Road  
Wright-Patterson AFB OH 45433-5209

Mr. Johnathan L. Buffalo  
Historical Preservation Director/NAGPRA Rep  
Sac and Fox of the Mississippi in Iowa  
349 Meskwaki Road  
Tama, IA 52339-9634

Dear Mr. Buffalo

Wright-Patterson Air Force Base (WPAFB) is preparing Environmental Assessments (EA) in accordance with the requirements of the National Environmental Policy Act (NEPA) to analyze the potential impacts from implementation of two separate undertakings proposed for WPAFB. One EA is for the proposed construction of a Tomography Range and Equipment Storage Facility in Area B of WPAFB. The range would support the Sensor Directorate's tomography mission. The proposed location for the range and storage facility is a vacant area (approximately 13 acres) in the southwest corner of Area B, as shown on Attachment 1. The second EA is for the proposal to implement a project to consolidate Civil Engineering (CE) functions across the base. The CE Consolidation project is a multi-component undertaking at several locations in Areas A and B of WPAFB (see Attachment 2). It is our opinion that neither of the proposed undertakings would have an adverse effect on any historic properties listed or eligible for listing on the National Register of Historic Places. In accordance with 36 CFR 800.11(e), we are submitting the following documentation to support this determination.

Description of the undertaking. The Tomography Range project includes installing twelve (12) fifty-foot towers with guy wires equally spaced in a circular pattern approximately 200 meters (650 feet) in diameter. Tower foundations, electric power supply, fiber optic lines, security lighting, lighting protection, compacted gravel drives, parking pad, and a 30' x 50' concrete block equipment storage facility would be constructed to operate and maintain the range (see Attachment 1). Minimal excavation would be required to construct the concrete tower foundations and poles. The twelve (12) tower foundations would require the excavation of a 4' x 6' area no more than 2' deep. The poles will be buried 77" inches in order to stabilize the antenna. The CE Consolidation project consists of four project locations; three of which are within the boundaries of Areas A and B (see Attachment 2). The project involves consolidation of services, alterations of existing facilities, and demolition of existing vacated facilities within the project areas. Also included would be the construction of a new gravel recreational vehicle storage lot proposed to be constructed on a section of WPAFB property west of Harshman Road.

Description of steps taken to identify historic properties. WPAFB has assessed all buildings on the installation that are 50 years old or older, and has assessed buildings for exceptional significance relating to the Cold War. As part of the Integrated Cultural Resources Management Plan at WPAFB, surveys



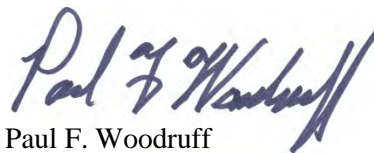
have been conducted encompassing the entire Base to locate historic and prehistoric archaeological sites. Numerous archaeological surveys have been conducted at WPAFB beginning in the 1990's with the U.S. Army Corps of Engineers Research Lab and continuing with various other contractors resulting in identification of eligible and non-eligible sites (Attachment 3, 2011 WPAFB-ICRMP maps). A Phase I archaeological survey of the Tomography Range project site was conducted with field work completed in March 2012. A letter report of the preliminary results of the field work is provided as Attachment 4. Based on the available information we have determined that there are no archaeological resources at the project site eligible for the National Register.

Description of the affected properties. There are no known archaeological sites listed or eligible for listing on the Nation Register of Historic Places within any of the Areas of Potential Effect for either of the EA project sites. The areas of the Base that would endure ground disturbance resulting from construction or demolition at all project site locations, except the Tomography Range site have been documented to be previously disturbed ground. The Tomography Range site was not previously surveyed for archaeological resources, therefore a Phase I archaeological survey of the site was performed.

Description of the undertaking's effects on historic properties. With completion of the Phase I archaeological survey of the Tomography range site, it is our opinion that based on the available information, we have determined that there are no archaeological resources at the project site eligible for the National Register. There are no known archaeological resources affected by either proposed undertaking. Therefore, in accordance with 36 CFR 800.5(b), we have determined that the proposed construction of a Tomography Range and Equipment Storage Facility and the proposed CE Consolidation project would have no adverse effect on historic properties.

WPAFB is currently consulting with the Ohio State Historic Preservation Office regarding this undertaking. Please review the information and if you have any concerns in the areas described, please contact me by phone at (937) 257-1374 or email me at [paul.woodruff@wpafb.af.mil](mailto:paul.woodruff@wpafb.af.mil).

Sincerely

A handwritten signature in blue ink that reads "Paul F. Woodruff". The signature is stylized with a large, looped "P" and a cursive "Woodruff".

Paul F. Woodruff  
Cultural Resources Manager  
Environmental Quality Section  
Environmental Branch

Attachments:

1. Tomography Range Project Location
2. CE Consolidation Project Locations
3. WPAFB Archaeological Mapping (ICRMP 2011)
4. Archaeology Survey Preliminary Report



## DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 88TH AIR BASE WING (AFMC)

WRIGHT-PATTERSON AIR FORCE BASE, OHIO

7 May 2012

Paul F. Woodruff, CRM  
88 ABW/CEANQ  
1450 Littrell Road  
Wright-Patterson AFB OH 45433-5209

Mr. William Johnson  
The Saginaw Chippewa Indian Tribe  
6650 East Broadway  
Mt. Pleasant, MI 48858

Dear Mr. Johnson

Wright-Patterson Air Force Base (WPAFB) is preparing Environmental Assessments (EA) in accordance with the requirements of the National Environmental Policy Act (NEPA) to analyze the potential impacts from implementation of two separate undertakings proposed for WPAFB. One EA is for the proposed construction of a Tomography Range and Equipment Storage Facility in Area B of WPAFB. The range would support the Sensor Directorate's tomography mission. The proposed location for the range and storage facility is a vacant area (approximately 13 acres) in the southwest corner of Area B, as shown on Attachment 1. The second EA is for the proposal to implement a project to consolidate Civil Engineering (CE) functions across the base. The CE Consolidation project is a multi-component undertaking at several locations in Areas A and B of WPAFB (see Attachment 2). It is our opinion that neither of the proposed undertakings would have an adverse effect on any historic properties listed or eligible for listing on the National Register of Historic Places. In accordance with 36 CFR 800.11(e), we are submitting the following documentation to support this determination.

Description of the undertaking. The Tomography Range project includes installing twelve (12) fifty-foot towers with guy wires equally spaced in a circular pattern approximately 200 meters (650 feet) in diameter. Tower foundations, electric power supply, fiber optic lines, security lighting, lighting protection, compacted gravel drives, parking pad, and a 30' x 50' concrete block equipment storage facility would be constructed to operate and maintain the range (see Attachment 1). Minimal excavation would be required to construct the concrete tower foundations and poles. The twelve (12) tower foundations would require the excavation of a 4' x 6' area no more than 2' deep. The poles will be buried 77" inches in order to stabilize the antenna. The CE Consolidation project consists of four project locations; three of which are within the boundaries of Areas A and B (see Attachment 2). The project involves consolidation of services, alterations of existing facilities, and demolition of existing vacated facilities within the project areas. Also included would be the construction of a new gravel recreational vehicle storage lot proposed to be constructed on a section of WPAFB property west of Harshman Road.

Description of steps taken to identify historic properties. WPAFB has assessed all buildings on the installation that are 50 years old or older, and has assessed buildings for exceptional significance relating to the Cold War. As part of the Integrated Cultural Resources Management Plan at WPAFB, surveys have been conducted encompassing the entire Base to locate historic and prehistoric archaeological sites.

Numerous archaeological surveys have been conducted at WPAFB beginning in the 1990's with the U.S. Army Corps of Engineers Research Lab and continuing with various other contractors resulting in identification of eligible and non-eligible sites (Attachment 3, 2011 WPAFB-ICRMP maps). A Phase I archaeological survey of the Tomography Range project site was conducted with field work completed in March 2012. A letter report of the preliminary results of the field work is provided as Attachment 4. Based on the available information we have determined that there are no archaeological resources at the project site eligible for the National Register.

Description of the affected properties. There are no known archaeological sites listed or eligible for listing on the Nation Register of Historic Places within any of the Areas of Potential Effect for either of the EA project sites. The areas of the Base that would endure ground disturbance resulting from construction or demolition at all project site locations, except the Tomography Range site have been documented to be previously disturbed ground. The Tomography Range site was not previously surveyed for archaeological resources, therefore a Phase I archaeological survey of the site was performed.

Description of the undertaking's effects on historic properties. With completion of the Phase I archaeological survey of the Tomography range site, it is our opinion that based on the available information, we have determined that there are no archaeological resources at the project site eligible for the National Register. There are no known archaeological resources affected by either proposed undertaking. Therefore, in accordance with 36 CFR 800.5(b), we have determined that the proposed construction of a Tomography Range and Equipment Storage Facility and the proposed CE Consolidation project would have no adverse effect on historic properties.

WPAFB is currently consulting with the Ohio State Historic Preservation Office regarding this undertaking. Please review the information and if you have any concerns in the areas described, please contact me by phone at (937) 257-1374 or email me at [paul.woodruff@wpafb.af.mil](mailto:paul.woodruff@wpafb.af.mil).

Sincerely

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Paul F. Woodruff  
Cultural Resources Manager  
Environmental Quality Section  
Environmental Branch

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## DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 88TH AIR BASE WING (AFMC)

WRIGHT-PATTERSON AIR FORCE BASE, OHIO

7 May 2012

Paul F. Woodruff, CRM  
88 ABW/CEANQ  
1450 Littrell Road  
Wright-Patterson AFB OH 45433-5209

Ms. Lisa Larue  
United Keetoowah Band of Cherokee Indians in Oklahoma  
PO Box 746  
Tahlequah, OK 74465

Dear Ms. Larue

Wright-Patterson Air Force Base (WPAFB) is preparing Environmental Assessments (EA) in accordance with the requirements of the National Environmental Policy Act (NEPA) to analyze the potential impacts from implementation of two separate undertakings proposed for WPAFB. One EA is for the proposed construction of a Tomography Range and Equipment Storage Facility in Area B of WPAFB. The range would support the Sensor Directorate's tomography mission. The proposed location for the range and storage facility is a vacant area (approximately 13 acres) in the southwest corner of Area B, as shown on Attachment 1. The second EA is for the proposal to implement a project to consolidate Civil Engineering (CE) functions across the base. The CE Consolidation project is a multi-component undertaking at several locations in Areas A and B of WPAFB (see Attachment 2). It is our opinion that neither of the proposed undertakings would have an adverse effect on any historic properties listed or eligible for listing on the National Register of Historic Places. In accordance with 36 CFR 800.11(e), we are submitting the following documentation to support this determination.

Description of the undertaking. The Tomography Range project includes installing twelve (12) fifty-foot towers with guy wires equally spaced in a circular pattern approximately 200 meters (650 feet) in diameter. Tower foundations, electric power supply, fiber optic lines, security lighting, lighting protection, compacted gravel drives, parking pad, and a 30' x 50' concrete block equipment storage facility would be constructed to operate and maintain the range (see Attachment 1). Minimal excavation would be required to construct the concrete tower foundations and poles. The twelve (12) tower foundations would require the excavation of a 4' x 6' area no more than 2' deep. The poles will be buried 77" inches in order to stabilize the antenna. The CE Consolidation project consists of four project locations; three of which are within the boundaries of Areas A and B (see Attachment 2). The project involves consolidation of services, alterations of existing facilities, and demolition of existing vacated facilities within the project areas. Also included would be the construction of a new gravel recreational vehicle storage lot proposed to be constructed on a section of WPAFB property west of Harshman Road.

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Numerous archaeological surveys have been conducted at WPAFB beginning in the 1990's with the U.S. Army Corps of Engineers Research Lab and continuing with various other contractors resulting in identification of eligible and non-eligible sites (Attachment 3, 2011 WPAFB-ICRMP maps). A Phase I archaeological survey of the Tomography Range project site was conducted with field work completed in March 2012. A letter report of the preliminary results of the field work is provided as Attachment 4. Based on the available information we have determined that there are no archaeological resources at the project site eligible for the National Register.

Description of the affected properties. There are no known archaeological sites listed or eligible for listing on the Nation Register of Historic Places within any of the Areas of Potential Effect for either of the EA project sites. The areas of the Base that would endure ground disturbance resulting from construction or demolition at all project site locations, except the Tomography Range site have been documented to be previously disturbed ground. The Tomography Range site was not previously surveyed for archaeological resources, therefore a Phase I archaeological survey of the site was performed.

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WPAFB is currently consulting with the Ohio State Historic Preservation Office regarding this undertaking. Please review the information and if you have any concerns in the areas described, please contact me by phone at (937) 257-1374 or email me at [paul.woodruff@wpafb.af.mil](mailto:paul.woodruff@wpafb.af.mil).

Sincerely

A handwritten signature in blue ink that reads "Paul F. Woodruff". The signature is stylized with a large, looped "P" and a cursive "F".

Paul F. Woodruff  
Cultural Resources Manager  
Environmental Quality Section  
Environmental Branch

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## DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 88TH AIR BASE WING (AFMC)

WRIGHT-PATTERSON AIR FORCE BASE, OHIO

7 May 2012

Paul F. Woodruff, CRM  
88 ABW/CEANQ  
1450 Littrell Road  
Wright-Patterson AFB OH 45433-5209

Ms. Summer Sky Cohen, Officer  
Tribal Historic Preservation Office  
Keweenaw Bay Indian Community  
16429 Beartown Road  
Baraga, MI 49908

Dear Ms. Cohen

Wright-Patterson Air Force Base (WPAFB) is preparing Environmental Assessments (EA) in accordance with the requirements of the National Environmental Policy Act (NEPA) to analyze the potential impacts from implementation of two separate undertakings proposed for WPAFB. One EA is for the proposed construction of a Tomography Range and Equipment Storage Facility in Area B of WPAFB. The range would support the Sensor Directorate's tomography mission. The proposed location for the range and storage facility is a vacant area (approximately 13 acres) in the southwest corner of Area B, as shown on Attachment 1. The second EA is for the proposal to implement a project to consolidate Civil Engineering (CE) functions across the base. The CE Consolidation project is a multi-component undertaking at several locations in Areas A and B of WPAFB (see Attachment 2). It is our opinion that neither of the proposed undertakings would have an adverse effect on any historic properties listed or eligible for listing on the National Register of Historic Places. In accordance with 36 CFR 800.11(e), we are submitting the following documentation to support this determination.

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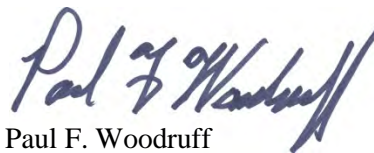
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WPAFB is currently consulting with the Ohio State Historic Preservation Office regarding this undertaking. Please review the information and if you have any concerns in the areas described, please contact me by phone at (937) 257-1374 or email me at [paul.woodruff@wpafb.af.mil](mailto:paul.woodruff@wpafb.af.mil).

Sincerely

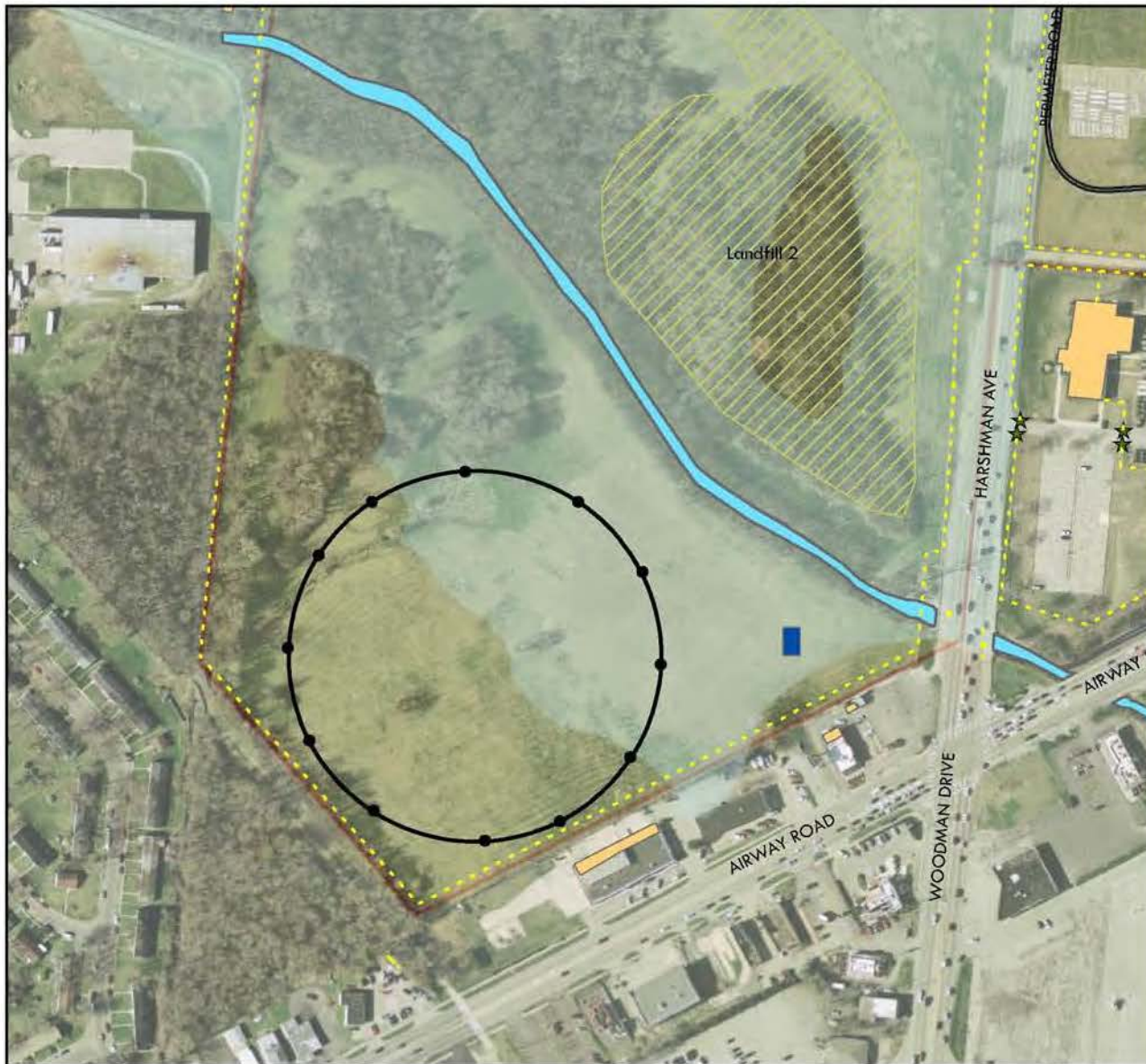
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Paul F. Woodruff  
Cultural Resources Manager  
Environmental Quality Section  
Environmental Branch

Attachments:

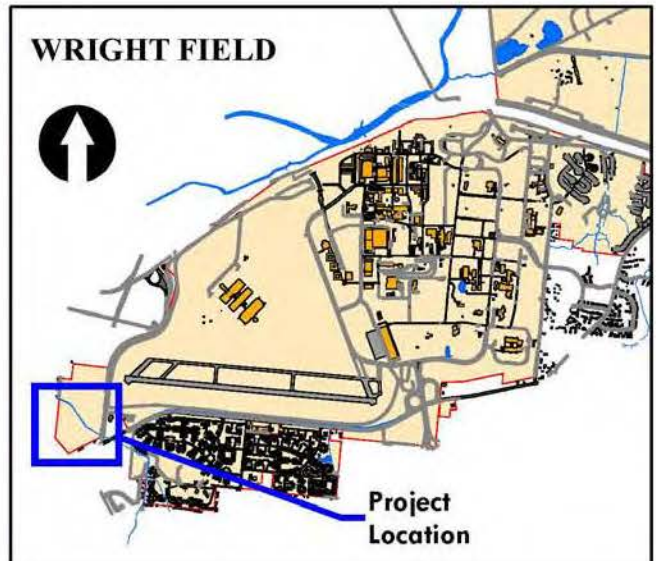
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4. Archaeology Survey Preliminary Report





Proposed Site Development: Tomography Range & Equipment Storage Facility

SEP 2010



Proposed Location for Tomography Range and Equipment Storage Facility  
Area B, Wright-Patterson AFB

## Kelly Maiorana

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**From:** Lisa LaRue-Baker - UKB THPO [ukbthpo-larue@yahoo.com]  
**Sent:** Tuesday, July 10, 2012 5:27 PM  
**To:** Woodruff, Paul F Civ USAF AFMC 88 ABW/CEANQ  
**Cc:** lstapleton@unitedkeetoowahband.org  
**Subject:** Tomography Project Wright-Patterson AFB Ohio

The United Keetoowah Band of Cherokee Indians in Oklahoma has reviewed your projects for Section 106 NHPA purposes, and cultural resources. At this time, we have no objection or comment. However, if any human remains or funerary items are inadvertently discovered, please cease all work and contact us immediately.

### **Lisa LaRue-Baker**

Acting THPO  
United Keetoowah Band of Cherokee Indians in Oklahoma  
PO Box 748  
Tahlequah, OK 74465

c 918.822.1952 f 918.458.6889  
[ukbthpo-larue@yahoo.com](mailto:ukbthpo-larue@yahoo.com)

# **OHIO ENVIRONMENTAL PROTECTION AGENCY**



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DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 88TH AIR BASE WING (AFMC)  
WRIGHT-PATTERSON AIR FORCE BASE OHIO

28 AUG 2012

CERTIFIED LETTER

88 ABW/CEA  
1450 Littrell Road  
WPAFB OH 45433

Ms. Tracy Buchanan  
Ohio EPA, Division of Material and Waste Management  
401 East Fifth Street  
Dayton OH 45402

Dear Ms. Buchanan

Wright-Patterson Air Force Base (WPAFB) is submitting an application for authorization of construction activities in accordance with Ohio Administrative Code 3745-27-13(F) and (H). The proposed work is within 300 feet of the boundary of Landfill (LF) 2, which is classified as a (D)(2) facility – unlicensed, unpermitted (by ODH or OEPA) facility that ceased acceptance of waste prior to 29 July 1976. Wright-Patterson Air Force Base is proposing the construction of a tomography range in Area B. Landfill 2 is part of Operable Unit 6 and located in Montgomery County in Area B of the base.

Additional information that we believe will be helpful is also included. This information provides a summary of the historical investigation activities that have taken place and follow-on remedial decisions. The point of contact within the Environmental Branch is Mr. John Crocker, who can be reached at 257-2312.

I have reviewed the attached information pertaining to the project and affirm that the assertions made in this application are true, and the applicable requirements contained in Chapter 3734 of the Revised Code and OAC 3745-27-13(H)(2-6) will be followed during the course of this action. I understand that I am subject to liability under applicable state laws forbidding false or misleading statements.

Sincerely

*Mark L. Mays*

MARK L. MAYS  
Chief, Asset Management Division

*Signed this 28th of August, 2012*  
*[Signature]*

Attachment:  
OAC 3745-27-13(D)(2) Application

cc:  
Donna Bohannon, Ohio EPA



TONYA WRIGHT, Notary Public  
in and for the State of Ohio  
My Commission Expires March 29, 2017

**Application for Authorization Under OAC 3745-27-13(F) for Wright-Patterson AFB  
Project to Construct a Tomography Range Partly Within 300 Feet of Landfill 2 in  
Operable Unit 6, Area B**

Wright-Patterson Air Force Base (Figure 1) (WPAFB) is proposing the construction of a tomography range in Area B at WPAFB. The proposed construction area is adjacent to the southwest edge of Landfill 2 and shown in Figure 2. This application is specifically for approval of construction activities within 300 feet of Landfill 2 and is provided per OAC 3745-27-13(F).

1. Name of the facility, if any, and type of facility: The facility is Landfill 2 (LF 2) at WPAFB, OH. The type of facility has been determined to be a OAC 3745-27-13(D)(2) facility (an unlicensed or unpermitted solid waste landfill that ceased acceptance of waste prior to July 29, 1976).
2. Address of the site: LF 2 is part of designated Operable Unit 6 (OU6), and is located in the southern half of OU6. Landfill 2 is bordered on the east by Harshman Road and on the west and northwest by the Municipality of Riverside. (See attached Figures 1 and 2).
3. County and township in which the site is located: LF 2 is located in Montgomery County, Ohio, wholly within the confines of the WPAFB boundary.
4. Name, address and telephone number of the person to contact for additional information:  
The point of contact for this project is:

John Crocker  
1450 Littrell Road  
Wright-Patterson AFB, OH 45433-5209  
(937) 257-2312

5. Size of the site: LF 2 has a total area of approximately 15 acres. The landfill is beneath a soil cover, which was the presumptive remedy for the site. Much of the site is heavily wooded.
6. Identification of type and amount of waste present at the site, including a description of the process that created the waste and the time period of waste disposal: Landfill 2, in OU6 near the southwestern boundary of Area B (see Figure 2), covers about 15 acres. The landfill was operated from the early 1940s through 1951 for disposal of Area B refuse. Unknown quantities of oily wastes, solvents, organic and inorganic chemicals, and hospital wastes were placed into gravel pits in direct contact with groundwater. The pits were closed in 1951. From 1955 through 1975, the area was used for surface disposal of hardfill and construction debris.
7. Description of activities proposed at the site: Wright-Patterson AFB proposes to construct a tomography range south and west of LF2. The area is identified in Figures 2

and 3. The project requires the construction of access roads, a parking area, and a support building just inside the southern edge of the 300 buffer around LF 2.

- The site entrance will be constructed of concrete 8-inches thick.
  - The parking area will be of gravel and cover approximately 20 square yards (sq yds). A paved handicapped parking space and concrete sidewalk will be constructed at the support building.
  - Roads will be constructed of gravel (6 inches). The total area of gravel roads (including areas outside the 300-ft buffer) is estimated at 2921 sq yds.
  - The support building will be 1500 sq ft in area.
  - Electricity is the only utility service that will be run to the site.
  - Excavations for footings, utility trenches, foundations etc. are expected to be no deeper than 4 ft.
8. Description of any institutional controls that apply to the site: LF 2 is a fenced area and is subject to excavation restrictions and organizational site controls. No aspect of the proposed earthwork will impact the current and existing ROD for 41 NA Sites, future land use, or site controls.
9. Description of the manner in which the control of air emissions, control of leachate, surface water runoff, explosive and toxic gas migration, and protection of groundwater will be performed:

If any evidence of buried waste material is encountered during the work, these soils and waste materials will be segregated, placed on visqueen, and protected from being dispersed with a visqueen cover. Should it be necessary to stage any soil and waste materials overnight, they will be covered and protected from weather. 88 ABW Civil Engineering (CE) will assign a representative, as necessary, to monitor on-site activities and control access during the earth work if evidence of buried waste is encountered. In the event that suspicious or potentially hazardous material is exposed, the field crew will notify the site supervisor, who will notify the CE project manager, and the 88 ABW/CEANQ restoration program point of contact and additional evaluation will be made. Suspicious and potentially hazardous material will be evaluated and analyzed. If materials are characterized as hazardous, they will be disposed of in accordance with all applicable rules and regulations.

WPAFB specifications provide general environmental protection requirements which are applicable to all facets of the project. Appropriate air emission and fugitive dust controls will be implemented as applicable. Appropriate explosive, toxic gas migration, and groundwater protection measures will be implemented as required. For this project, chemical hazards may vary depending on the presence or absence of waste. Anticipated hazards and controls are presented below.

Suspicious and potentially hazardous material is not anticipated since the proposed area is outside the footprint of LF2. As a precaution, CE will have a representative who will be responsible for assessing the environmental conditions and who will be familiar with all appropriate and applicable regulations. All personnel will have field hazard communication training and be aware of the general site conditions.

10. Letters of acknowledgement from owners of all parcels of land to which the authorization pertains: WPAFB currently owns the property where LF2 and the proposed area is located. The work is within the confines of WPAFB Installation Boundaries.
11. Statements and affidavit: Please see the cover letter for applicable statements and affidavit. WPAFB understands that under this rule, work may begin within 300 feet of LF2, thirty-one days after submittal of this application, unless informed otherwise. WPAFB understands that if solid or hazardous waste and/or potentially contaminated soils are removed from the facility property, representative sampling shall be performed, and results submitted to the respective agency. All excavation activities will be performed in accordance with OAC 3745 27-13(H)5 and (H)6, it is anticipated that any waste removed from the waste placements will be properly stored and then treated or disposed of at a licensed, permitted treatment or disposal facility in accordance with all applicable regulations.

Reference:

Wright-Patterson Air Force Base (WPAFB), Record of Decision for 41 No Action Sites, 28 August 1998.



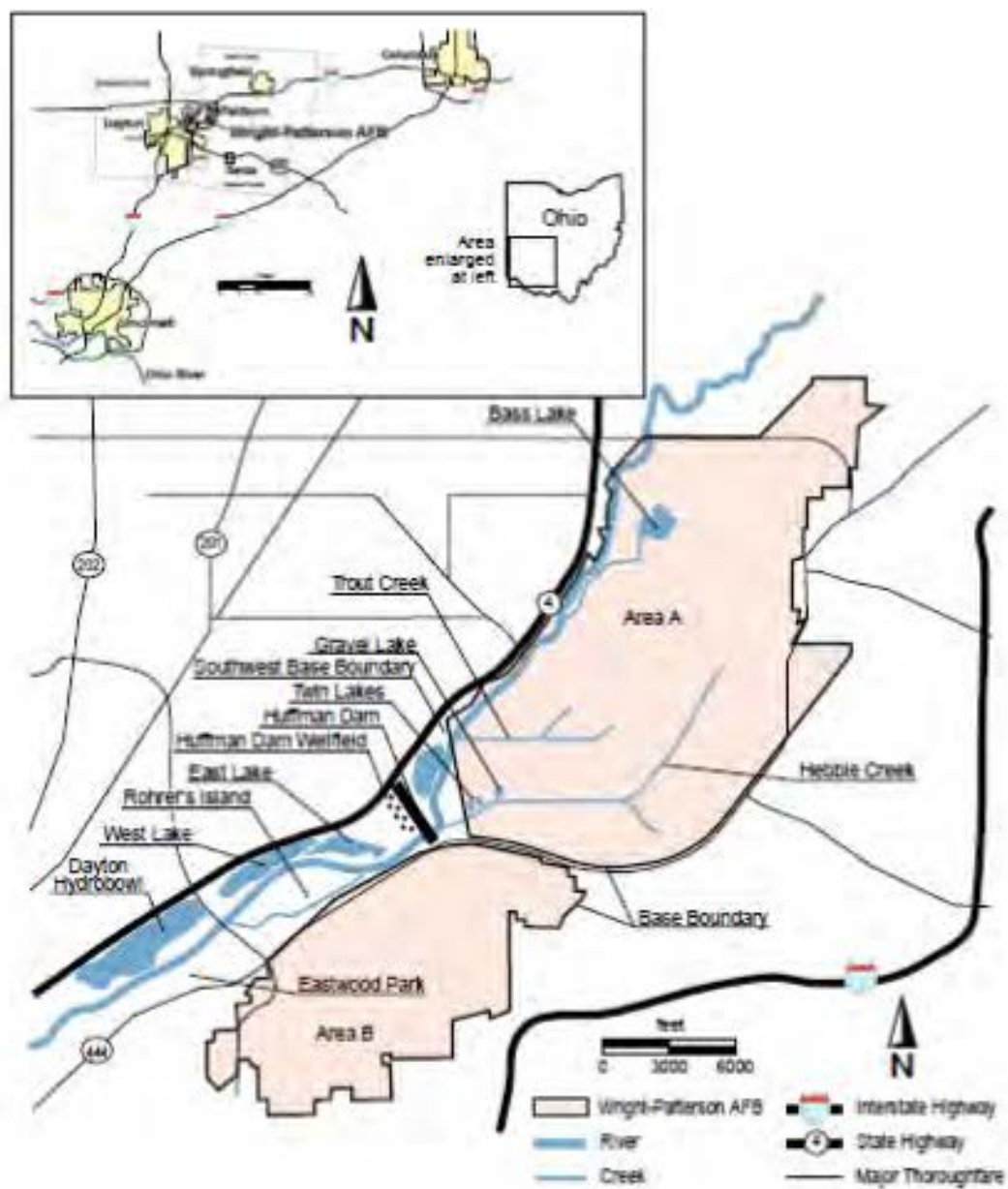
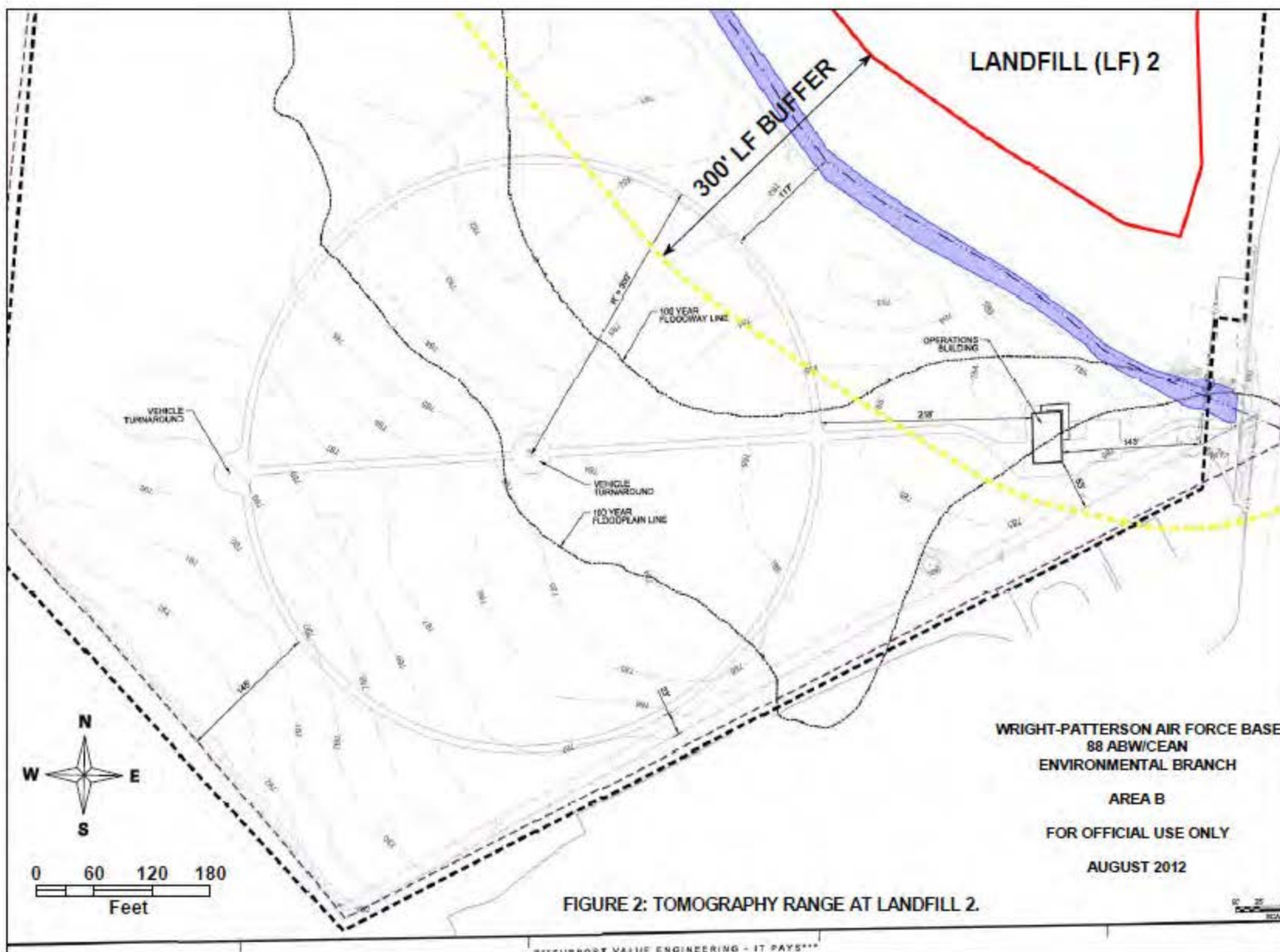


Figure 1. Site Location Map.



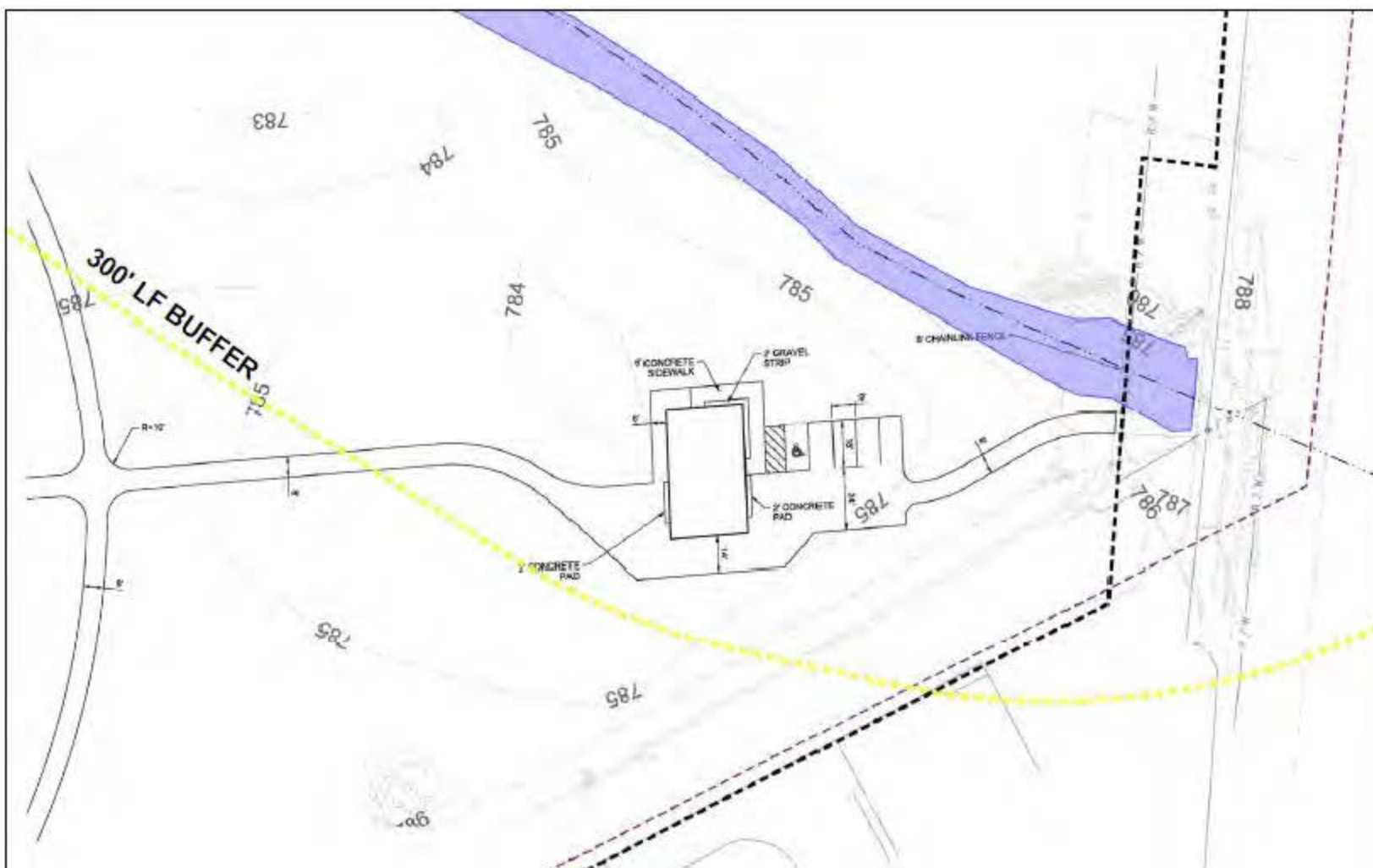


FIGURE 3: BUILDING AND ACCESS ROAD TO BE CONSTRUCTED  
WITHIN 300 FEET OF LANDFILL 2.

WRIGHT-PATTERSON AIR FORCE BASE  
88 ABW/CEAN  
ENVIRONMENTAL BRANCH  
AREA B  
FOR OFFICIAL USE ONLY  
AUGUST 2012



Environmental  
Protection Agency

John R. Kasich, Governor  
Mary Taylor, Lt. Governor  
Scott J. Nally, Director

September 19, 2012

Mr. Mark L. Mays, Chief  
Asset Management Division  
Department of the Air Force  
88 ABW/CEA  
1450 Littrell Road  
WPAFB, Ohio 45433

Dear Mr. Mays:

Ohio EPA, Southwest District Office (SWDO), Division of Materials and Waste Management (DMWM) has reviewed an Ohio Administrative Code Rule 3745-27-13 request for work within 300 feet of the boundary of Landfill 2. The request was dated August 28, 2012, and received on August 30, 2012; support documentation was received via email on September 6, 2012. The proposed work is for construction of a tomography range in Area B.

The request contains the information required by OAC 3745-27-13(D)(2). At this time, you may proceed with the project as outlined in the August 28, 2012, request and supporting documentation received on September 6, 2012.

Please be aware that per Ohio Administrative Code (OAC) 3745-27-13(H)(10), within 60 days of completion of the work, a certification report must be submitted to the attention of Jill Olberding at Ohio EPA, SWDO. Please provide this office with a statement that surface soils which were disturbed have been restored to a condition more protective than or equivalent to condition prior to the activities being performed. If waste was not encountered, you may simply state the work was completed and no waste was encountered. In addition, please refer to the Land Use Control Plan, Wright-Patterson Air Force Base dated February 2006 to ensure no conflicts arise pursuant to the work activities.

If you have any questions you may contact me at 937-285-6094.

Sincerely,

Jill Olberding, R.S.  
Environmental Specialist  
Division of Materials and Waste Management

JO/tf

cc: Donna Bohannon, Ohio EPA, SWDO  
ec: Paul Stuart, Public Health, Dayton & Montgomery County

## **APPENDIX B**

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### **RF EXPOSURE ANALYSIS AT TILLMAN PIT**



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MEMO FOR: Tim Poth, AFRL/RYPD  
Gary Scalzi, AFRL/RYPMDA  
Johnathan Scanlan, AFRL/RYPMDB  
James Root, AFRL/RPDE

FROM: Kenneth Schafer, AFRL/RYPMDB

SUBJECT: RF Exposure Analysis for Tillman Pit (DiSTer Range)

26-July-2011

88<sup>th</sup> CE has requested that we provide "information on the potential for telecommunications interference and human health and safety" in regards to the DiSTer (near tomography) test range under construction at the Tillman Pit site.

Telecommunications:

A frequency authorization request is in progress with the Wright Paterson Spectrum Management office. Spectrum Management must consider potential interference with other spectrum users, and address those issues when granting spectrum allocation and maximum transmit power for the Tillman Site. For the power levels proposed (less than 1 watt), the potential for interference with other systems is negligible.

Human health:

The Federal Communications Commission Office of Engineering and Technology provides considerable guidance on permissible exposure levels to RF fields (OET Bulletin 56 and Bulletin 65). The analysis below is based upon the FCC guidance.

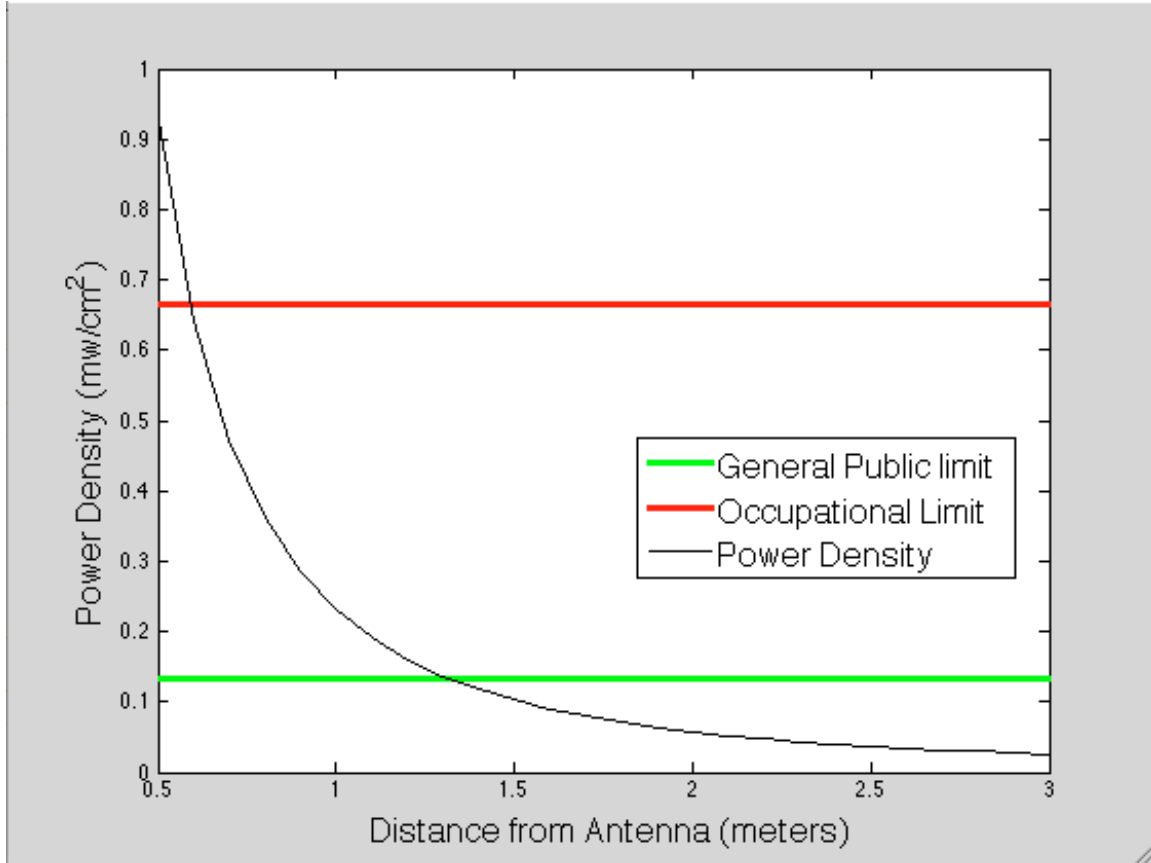
Two scenarios are presented. Scenario A represents the configuration of the transmitters as detailed in the frequency authorization request. Scenario B represents a potential future expansion with increased transmitter power and antenna gain.

In each case, the maximum safe exposure as defined by the FCC is shown for two categories of persons, the general public and occupational. Occupational limits apply to persons who are exposed as a consequence of their employment and are aware that RF exposure is taking place. General population limits apply to individuals in the general public who may be unaware of their exposure, or who cannot control their exposure.

Scenario A: Configuration as detailed in the Frequency Allocation request.

Assumptions:

Transmitter power : 28 dBm  
Antenna Gain: 6.7 dBi  
Cable Loss: none  
Operating Frequency: 200 Mhz – 1 GHz  
Waveform: CW for 6 minutes



Indications:

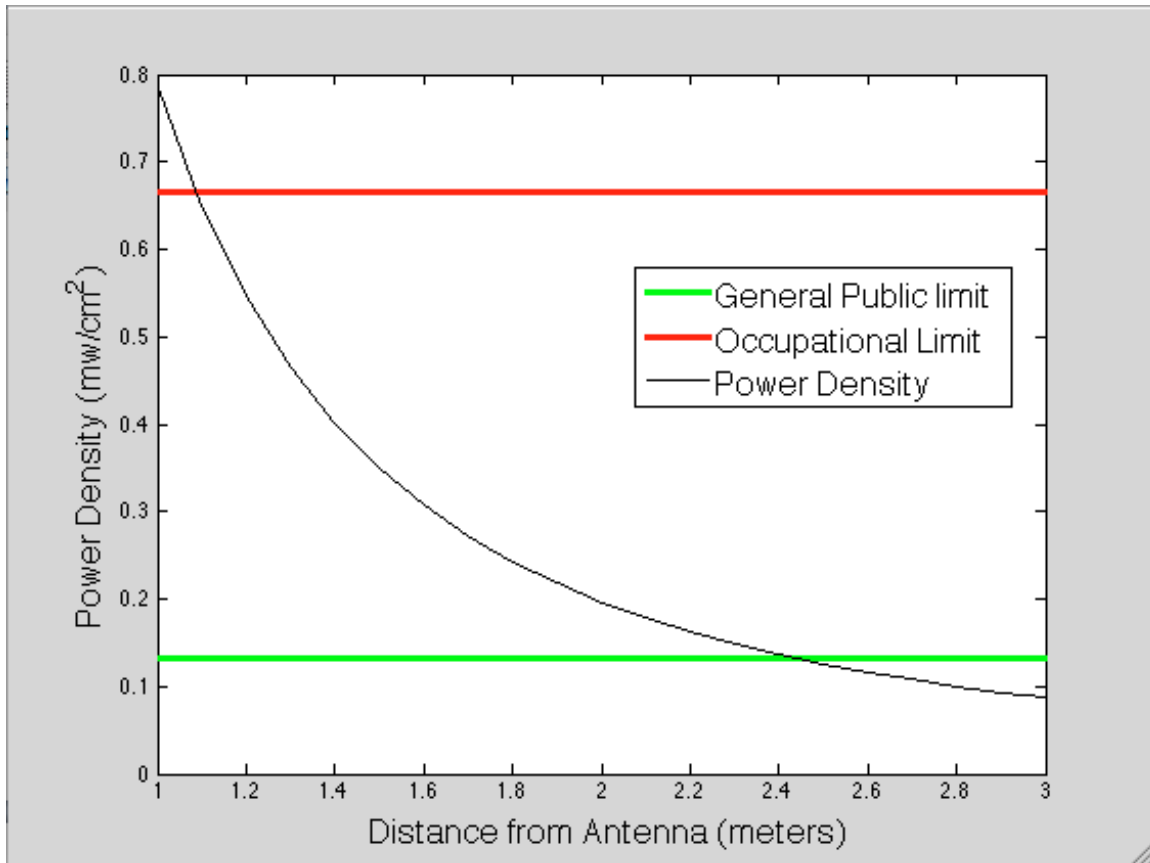
During operation, safe exposure levels will be maintained if the following distances from the radiating antenna are maintained:

General Public: 1.32 meters  
System Operators: 0.60 meters

## Scenario B: One possible future system upgrade

### Assumptions:

Transmitter power : 30 dBm  
Antenna Gain: 10 dBi  
Cable Loss: none  
Operating Frequency: 200 Mhz – 1 GHz  
Waveform: CW for 6 minutes



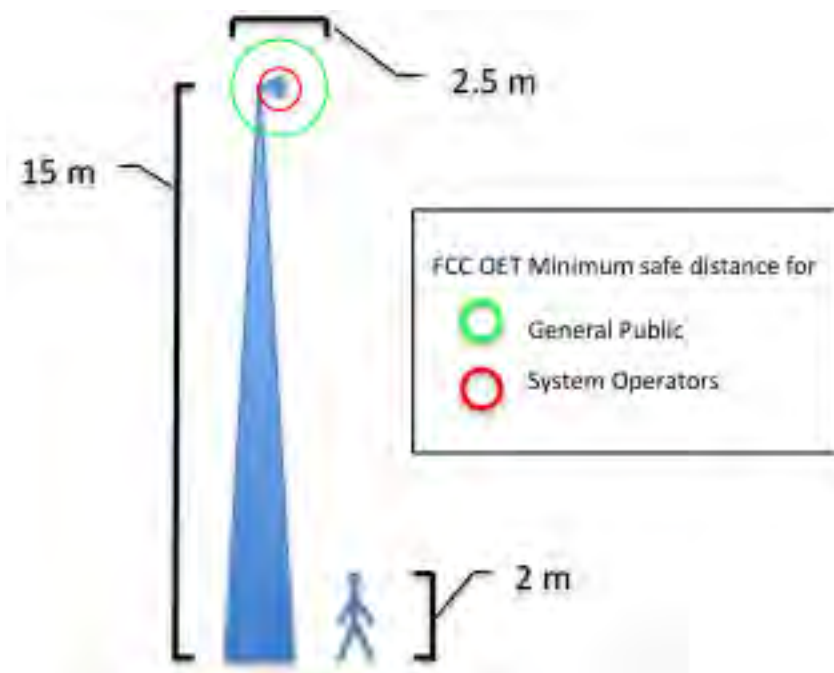
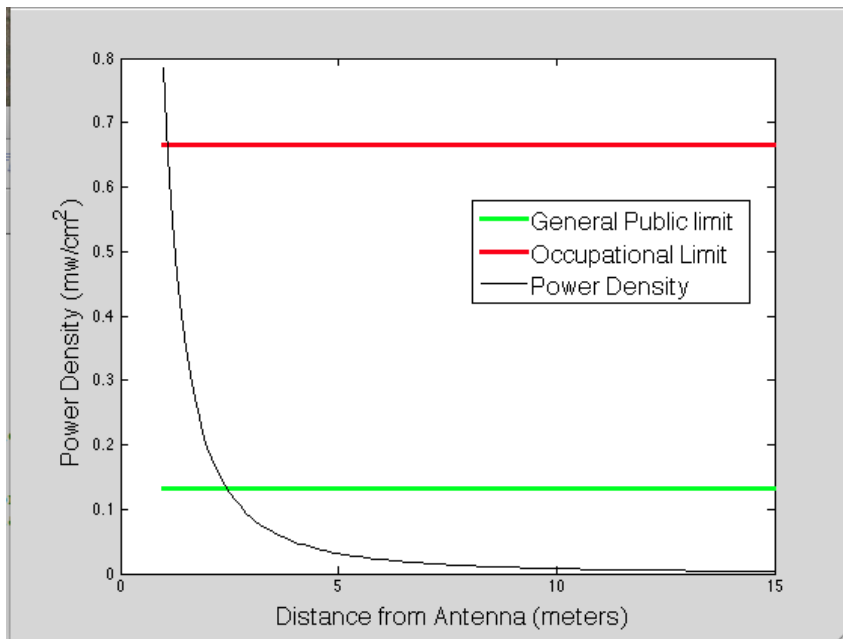
### Indications:

During operation, safe exposure levels will be maintained if the following distances from the radiating antenna are maintained:

General Public: 2.45 meters  
System Operators: 1.10 meters

## Observations

In a “worst case” scenario (see below), the minimum recommended distance from the antennas is 2.45 meters. The antennas will be mounted on towers approximately 15 meters above ground level. A person standing directly below the antenna at ground level will be well outside the exclusion zone and receive negligible exposure to any RF energy.





Recommendations:

- 1) Although potential exposure is negligible, it is recommended as a best practice that no personnel be permitted within the test area while the system is transmitting.
- 2) System operators should visually verify that no personnel are within the test area before activating RF transmitters.
- 3) Transmitters should be disconnected from power sources during any maintenance operations on the tower or antenna
- 4) Some type visual indicator should be illuminated whenever RF energy is emitted by the system.
- 5) Signage should be posted indicating the RF energy exists in the test area and unauthorized personnel should not enter the area.